CSIR NEWS

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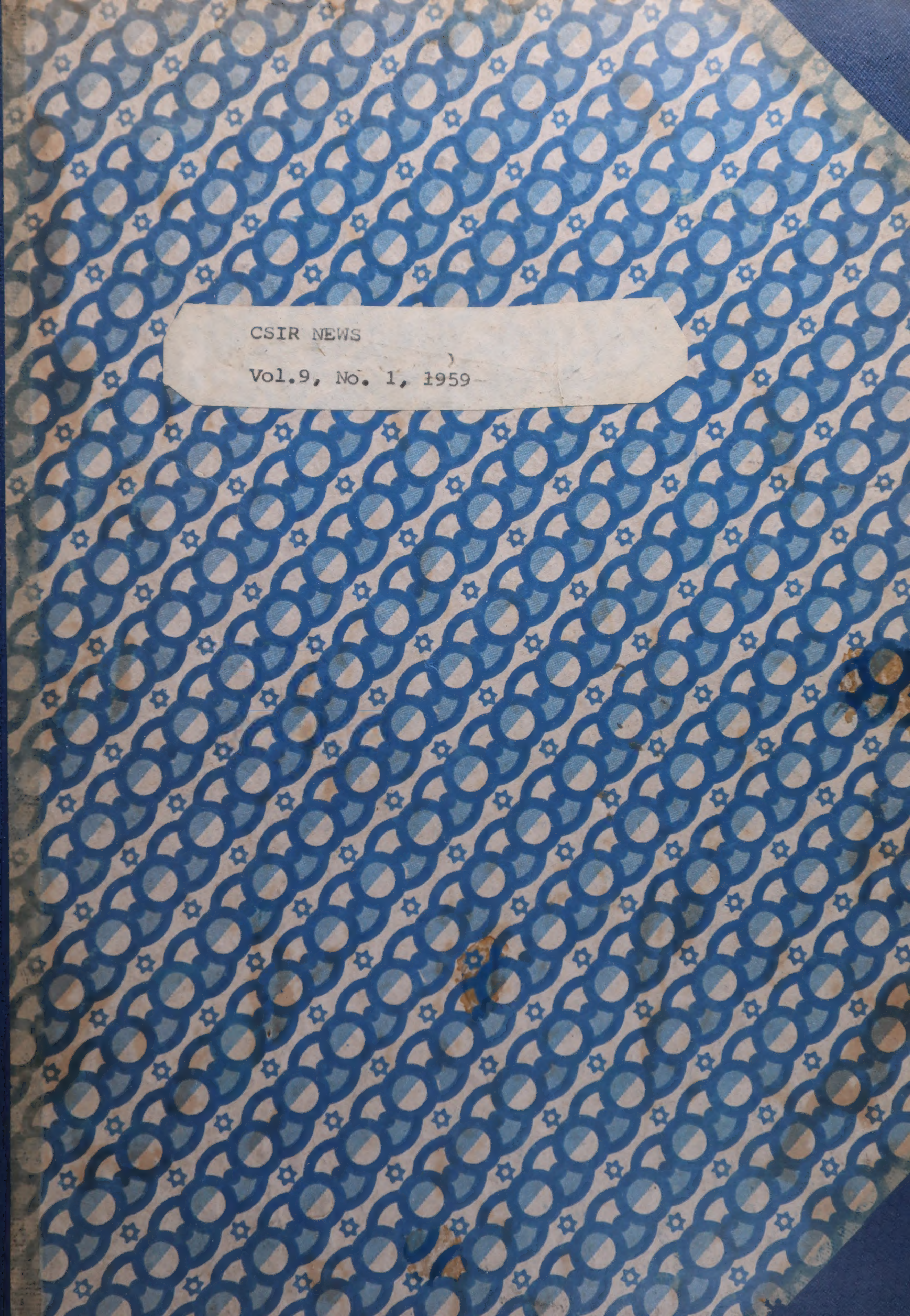

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CSIR news

NEW DELHI—VOL. 9, NO. 1, JAN. 10, 1959
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MEETINGS & SYMPOSIA

A meeting of the *Electrical & Mechanical Engineering Research Committee* will be held in the Conference Room of the CSIR Secretariat, New Delhi, on Jan. 12, 1959 at 3.00 p.m. Prof. M. S. Thacker, Director-General, Scientific & Industrial Research, will preside.

A meeting of the *Radio Research Committee* will be held in the Conference Room of the CSIR Secretariat, New Delhi, on Jan. 18. 1959 at 10.00 a.m. Dr. K. S. Krishnan, Director, NPL, New Delhi, will preside.

A meeting of the *Civil Engineering & Hydraulics Research Committee* will be held in the Conference Room of the CSIR Secretariat, New Delhi, on Jan. 20, 1959 at 10.00 a.m. Shri A. N. Khosla, Vice-Chancellor, Roorkee University, will preside.

A meeting of the *Geological & Mineralogical Research Committee* will be held in the Conference Room of the CSIR Secretariat, New Delhi, on Jan. 20, 1959 at 3.00 p.m. Dr. D. N. Wadia, Geological Adviser, Department of Atomic Energy, New Delhi, will preside.

A meeting of the *Pharmaceuticals & Drugs Research Committee* will be held in the Conference Room of the CSIR Secretariat, New Delhi, on Jan. 23, 1959 at 10.00 a.m. Maj. Gen. S. S. Sokhey will preside.

Iron and Steel Industry in India

A symposium on Iron and Steel Industry in India will be held at the *National Metallurgical Laboratory,* Jamshedpur, from Feb. 4 to Feb. 7, 1959. Prof. M. S. Thacker, Director-General, Scientific & Industrial Research, has kindly consented to inaugurate the symposium. Shri J. J. Ghandy, Director-in-charge, Tata Industries Ltd. and Chairman, Executive Council, NML, will preside.

The following aspects of the subject will be discussed at the symposium:

(1) Raw materials — Iron ore, coal, coke, etc. — their assessment and preparation including ore beneficiation, sintering, coal blending and coking.

(2) Physical chemistry of iron and steel production and related theoretical treatment such as, slag-metal equilibria, heat-transfer, thermal efficiency of metallurgical processes, heat balance, etc.

(3) Recent technological advances in iron and steel metallurgy.

(4) Utilisation of by-products of the industry.

(5) Casting and metal-working techniques including hot and cold rolling, extrusion, deep-drawing, wire-drawing, etc.

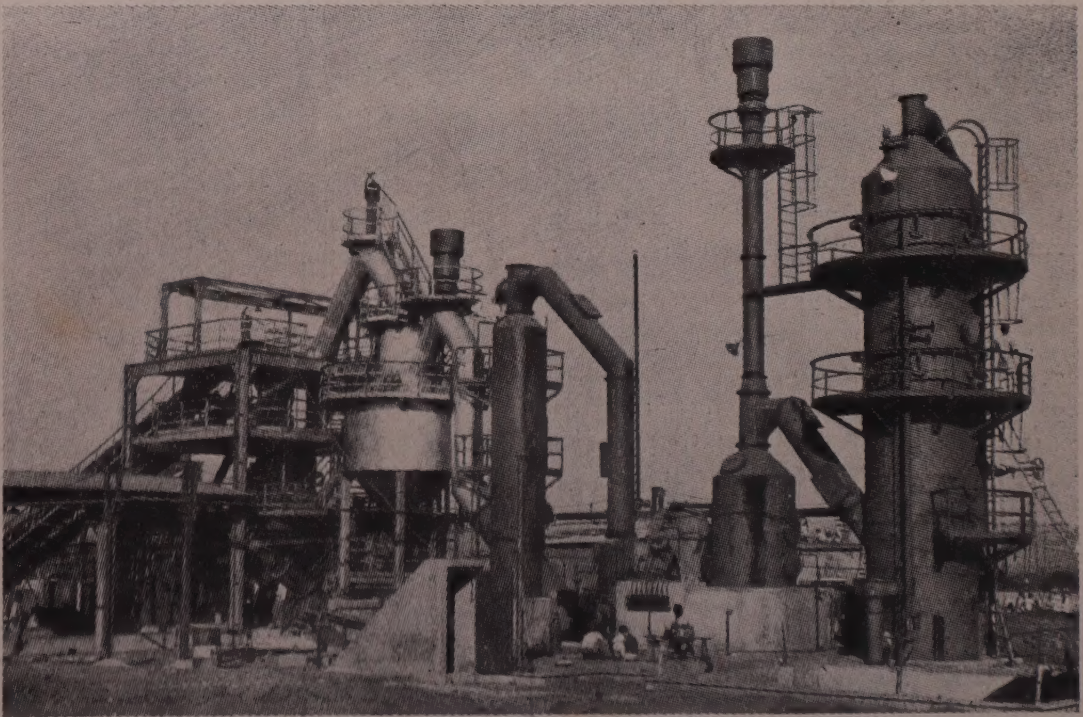
(6) Present status and future of the industry in India in relation to her Five-Year Plans and world production trends.

A large number of scientific and technical papers dealing with above aspects have been received for presentation at the symposium from technologists, metallurgists and research scientists in India and abroad. Distinguished technologists and scientists are expected to attend the symposium.

A Low-Shaft Furnace Pilot Plant for smelting iron with non-coking coals installed at the Laboratory is expected to be in operation at the time.

Gas Turbine Research Centre

A Centre for research and development of gas turbine engines has been set up by CSIR at the Indian Air Force Maintenance Centre, Kanpur, in collaboration with the Union Ministry of Defence. The Centre will ultimately be shifted to Bangalore as an adjunct to the Aero-Engine Factory.



NML, JAMSHEDPUR—Pilot low-shaft furnace installed at the Laboratory. The furnace is expected to go into operation in February 1959

BRIEFS

"Indians Abroad" Directories

The publication of "Indians Abroad" Directories, giving names and particulars of qualified technical Indians abroad, by the National Register Unit, has been noted in earlier issues (*CSIR News*, Vol. 8, Nos. 7, 8, 11 & 18). The following supplementary volumes of the Directories have been recently published: (1) *Engineers* (Series E), Nos. 3 & 4 containing particulars of 166 and 159 persons respectively; (2) *Scientists & Technologists* (Series ST), Nos. 3 & 4 (171 and 116 persons respectively); (3) *Medical Personnel* (Series M); No. 2 (81 persons); and (4) *Business Administrators and Accountants* (Series B & A), No. 2 (90 persons).

The names and particulars of 777 engineers, 612 scientists & technologists, 149 medical personnel and 186 business administrators and accountants have been so far included in the Directories.

Copies of the Directories (price, 50 nP. each) are available from the Sales & Distribution Officer, Publications Directorate, CSIR, Old Mill Road, New Delhi.

Research Fellowships

The following have been awarded *CSIR Fellowships* for research in schemes noted against their names:

Senior Fellowship:

1. Dr. S. C. Datta — *Storage and respiration of fruits and vegetables* (Jadavpur University, Calcutta).
2. Shri D. K. Banerjee — *Investigation on improving the quality of bricks* (Road and Building Research Institute, Calcutta).

Junior Fellowship:

1. Shri Mukul Biswas — *Thermodynamic properties of high polymers and binary liquid mixtures* (Indian Association for the Cultivation of Science, Calcutta).
2. Shri Bhairab Nath Roy — *Mechanism of vulcanisation of rubber* (Indian Association for the Cultivation of Science, Calcutta).
3. Shri Maheswar Sharma — *Synthetic studies on triterpenoids* (Indian Association for the Cultivation of Science, Calcutta).
4. Shri Mihir Chowdhury — *Mechano-chemical properties of polymer analogous to muscle proteins* (University College of Science, Calcutta).
5. Dr. Ranjit Kumar Mukherjee — *Comparative studies of electrolytes and proteins* (Institute of Child Health, Calcutta).
6. Smt. Sudha Gupta — *Studies on biosynthesis of cholesterol from acetate-1-C^{14} in vitro by liver slices and cellular fractions of rat liver* (University College of Science and Technology, Calcutta).
7. Shri M. P. Singh Katyar — *Absorption and fluorescence spectra of molecules* (University of Allahabad, Allahabad).
8. Shri Inder Raj — *Studies in terpenes and terpenoids* (Punjab University, Chandigarh).

The following have been awarded *CSIR Fellowships* (Junior) for research at RRL, Hyderabad, in the subjects noted against their names:

1. Shri A. Abraham — *Protein and nucleic acid metabolism in cells with a view to tracing their biosynthesis* (w.e.f. Oct. 28, 1958).
2. Shri Mohd. Swaleh — *Analytical studies of Palmarosa oil* (w.e.f. Nov. 15, 1958).
3. Shri Gopalakrishnamoorthy — *Products from cashewnut shell liquid* (w.e.f. Nov. 19, 1958).

Research Schemes Terminated

The following research schemes have been approved for termination with effect from Feb. 28, 1959:

1. *Experiments for design of cavitation tunnels* — Shri N. S. Govinda Rao, Indian Institute of Science, Bangalore.
2. *Study of building stones of Rajasthan*—Shri P. Pratapa Mowli, Engineering College, Jodhpur.

PATENTS & PROCESSES

Applications Filed

65542: *Improvements in or relating to the production of foundry core oil* — J. P. Varma, NCL, Poona.

65543: *A process for the preparation of alpha—omega dicarboxylic acids and omega-hydroxy acids suitable for conversion to macrocyclic compounds* — H. H. Mathur & S. C. Bhattacharyya, NCL, Poona.

65976: *Improvements in or relating to suspension polymerization of vinyl monomers* — R. M. Joshi & S. L. Kapur, NCL, Poona.

65977: *Rubber-base adhesive* — Uma Shankar, NCL, Poona.

66079: *An improvement in the pressure measuring device* — G. S. Ramaswamy, S. K. Narayana & D. S. Bhatnagar, CBRI, Roorkee.

66095: *A new method for production of diesel oil from coal-tar and coal-tar fractions* — N. G. Basak, S. K. Bose, A. Lahiri & A. Ganguly, CFRI, Jealgora.

66096: *A process for the production of bacterial diastase by submerged culture* — I. Babbar, R. M. Behki & M. C. Srinivasan, NCL, Poona.

66109: *Improvements in or relating to the production of magnesium metal* — V. Aravamuthan & K. Venugopal, CECRI, Karaikudi.

Applications Sealed

India

58382: *A container closure device* — C. R. Gupta, NPL, New Delhi.

59266: *A method for the isolation of psoralen-isopsoralen mixture from the seeds of* Psoralea corylifolia (babchi) — S. Bhattacharji & M. L. Dhar, CDRI, Lucknow.

61801: *An electrochemical process for the production of aluminium hydroxy-chlorides*—A. Jogarao & B. A. Shenoy, CECRI, Karaikudi.

62497: *A process for the fractionation and isolation of individual cardioactive glycosides* of Digitalits — M. M. Dhar, M. M. Khanna & M. L. Dhar, CDRI, Lucknow.

Germany

C 10 359 IVa/12i: *Improvements in or relating to ion-exchangers from coal, peat, lignite or the like* — R. P. Puri & P. K. Banerjee, CFRI, Jealgora.

RESEARCH IN PROGRESS

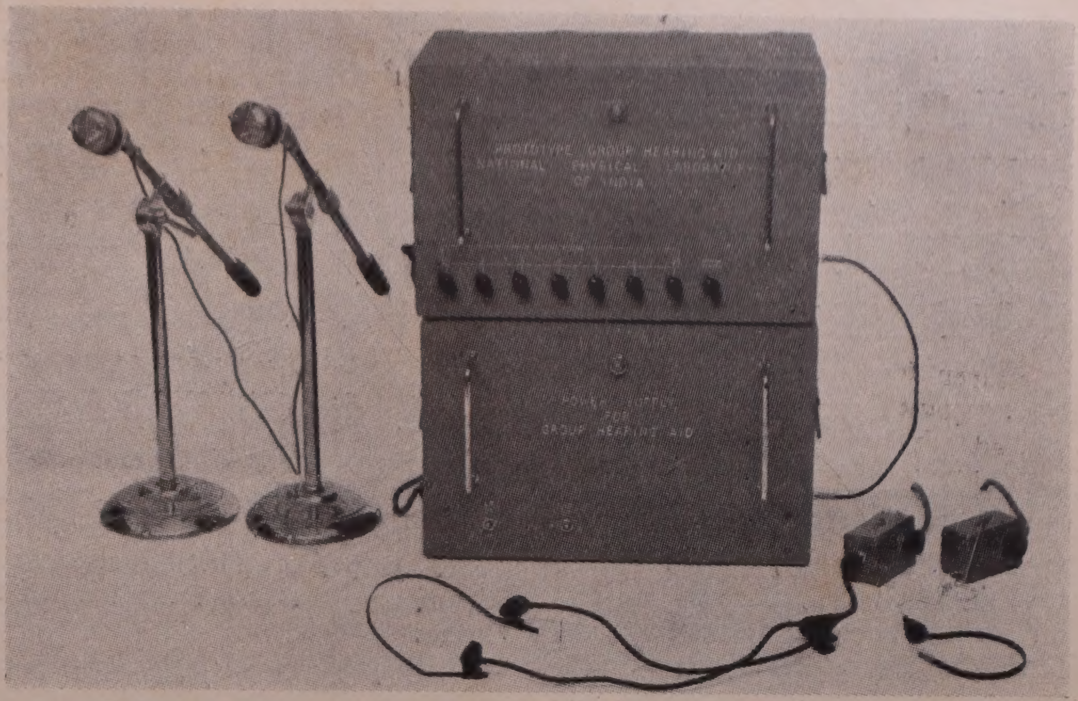
National Laboratories

National Physical Laboratory, New Delhi

Group Hearing Aid — Hearing aid suitable for use in schools for deaf students has been designed and constructed. The aid consists of a mixer unit which combines the output from seven microphones — one for the teacher and six for students (two students sharing one microphone) — and a well shielded amplifier with two outlets each having six channels, thus providing listening facilities for twelve deaf students using either insert ear-pieces or bone conduction receivers depending on the nature of the defect. The volume level can be adjusted by each student according to his requirement with the help of a control fixed at each desk.

Depending on the strength of the class, the number of microphones and output channels can be suitably increased or decreased.

The aid was subjected to field tests at a local Deaf and Dumb School for a few months.



NPL, NEW DELHI—Group hearing aid for use in schools for the deaf

National Metallurgical Laboratory, Jamshedpur

Beneficiation of Ferruginous Manganese Ore — A low-grade ferruginous ore from Siljora-Kalimati mines (Orissa) was reduced in vertical reduction furnace designed and fabricated at the Laboratory (*CSIR News*, Vol. 7, No. 18, p. 3). Wet magnetic separation of the reduced ore at -10 mesh yielded manganese concentrates assaying 52.9 and 52.2 per cent Mn with manganese recoveries of 67.0 and 68.1 per cent respectively for a Mn/Fe ratio of 7:1.

Binders for Zircon Refractories— Studies carried out on the green and dry bonding characteristics of different additions of sulphate lye and molasses to the zircon refractory compositions developed at the Laboratory (*CSIR News*, Vol. 8, No. 7, p. 3) have shown that the binders can replace dextrin economically. The zircon refractories prepared with the compositions containing the binders under pneumatic ramming process are as good as those prepared under hydraulic press.

Central Electrochemical Research Institute, Karaikudi

Bright Nickel Deposit — In the course of investigations on the effect of rotation of electrodes on electrochemical reactions, it has been found that a bright deposit of nickel, free from pin holes, is obtained on rotating mild steel, copper and brass cathode in the ordinary Watt's bath without any addition agents. The influence of pH, composition of bath and cathode current density on nickel deposition has been studied — K. C. Narasimhan & H. V. K. Udupa.

Sponsored Research

Steroid Hormones from Sugarcane Wax — Studies have been in progress for the isolation of sterols from sugarcane wax with a view to utilise them as a source of steroid hormones.

Soft wax containing the greater portion of sterols has been prepared from sugarcane wax by the following process: Extraction by toluene, removal of toluene and crystallising the residue from ethyl alcohol and extraction of the crystals with acetone and filtering the solution to remove the hard portion present and evaporation of the acetone solution.

The non-saponifiable portion of the soft wax has been isolated by saponification, ether extraction and evaporation of the ether. The residue, on repeated crystallisation by using acetone and alcohol, yielded three portions, a sterol (m.p., 125° - 145°C.), a pale yellow solid (m.p., below 100°C.) and a dark red oily matter. Examination of the sterol portion has proved the presence of sitosterol — K. N. Menon & M. Krishna, Madras University, Madras.

Research Papers

Some observation on the recent developments in the CO_2 process — B. V. Somayajulu, P. K. Gupte & R. M. Krishnan, NML, Jamshedpur. *Engng Times & Foundary News*, **1** (1958), 39-43.

Comparative study of the effect of silver pre-coats on the texture of zinc and cadmium films condensed from vapour in vacuo — V. R. Guru Morti & M. K. Gharpurey, NCL, Poona. *Optik*, **15** (1958), 481-84.

Personal

* Dr. B. C. Kar has been appointed, on promotion, Asst. Director (*Chemical*), NML, Jamshedpur, with effect from Oct. 30, 1958.

Dr. Kar (*b*., East Pakistan, 1907) took his D.Sc. degree from the Dacca University (1937) and served the University as Senior Lecturer for several years. In 1949, he joined the NML and was awarded United Nations Fellowship (1952) for studies on Electrolytic Manganese and Battery-grade Manganese Dioxide from Low-grade Manganese Ores at the Institute of Technology, U.S.A. Since his stay at NML, he has worked on a large number of problems on pure and applied chemistry including spectrochemical analysis of ferrous and non-ferrous metals and alloys, production of electrolytic manganese and manganese dioxide and liquid gold.

* Shri P. K. Gupte has been appointed, on promotion, Asst. Director (*General Metallurgy*), NML, Jamshedpur, with effect from Oct. 30, 1958.

Born in Amravati Dt., Bombay State (1917), Shri Gupte graduated in Metallurgy from the Banaras Hindu University (1940). He worked at the Government Metallurgical Inspectorate, Tatanagar for 5 years and proceeded to England (1945) under a Government scholarship for advanced research at the National Physical Laboratory, Teddington. On his return to India (1948) he joined NML, and has carried out investigations on the development of bullet-proof armour plates, nickel-free austenitic stainless steel, nodular cast iron from Indian pig iron and studies on thermal beneficiation of manganese ores.

* Shri B. M. Das has been appointed, on promotion, Asst. Director (*Mechanical Metallurgy & Testing*), NML, Jamshedpur, with effect from Oct. 30, 1958.

Shri Das (*b*. 1921) obtained his M.Sc. degree in Pure Physics from Calcutta University (1942). He worked at the Government Metallurgical Inspectorate, Tatanagar till his joining the NML in 1951. He left for U.K. in Oct. 1957 for advanced training in the Working of Metals at the Department of Industrial Metallurgy, Birmingham, under a Colombo Plan scholarship. He has published a large number of papers in the field of mechanical metallurgy.

* Shri A. L. Kapoor has been appointed Junior Scientific Officer, NCL, Poona, with effect from Dec. 23, 1958.

* * *

* The following Officers left for U.K. under the Colombo Plan Scholarship Programme for training in subjects noted against their names:

Shri T. D. Bansal, Junior Scientific Officer, NPL, New Delhi — *Precision Thermometry* (Oct. 30, 1958).

Shri D. R. R. Narahari, Junior Scientific Officer, CBRI, Roorkee— *Soil Mechanics and Foundation Engineering* (Sept. 27, 1958).

Dr. D. C. Dhar, Junior Scientific Officer, CDRI, Lucknow — *Metabolic and Haematological Studies in Blood Disorders* (Oct. 7, 1958).

* Shri Chanan Singh, Senior Scientific Assistant, CDRI, Lucknow, left for U.S.S.R. for training in *Production of Vitamins*, under a U.S.S.R. Government Scholarship.

* * *

* Drs. A. B. Biswas & J. Gupta, Asst. Directors, NCL, Poona, have been nominated members of the *Chemistry Advisory Committee, Department of Atomic Energy*, Bombay.

* Shri Prem Prakash, Asst. Director, NPL, New Delhi, has been nominated a member of the *Panel for Clocks & Watches Industry, Ministry of Commerce & Industry*.

* Dr. D. S. Bhatia, Asst. Director, CFTRI, Mysore, has been nominated a member of the Sub-Committee of the *Central Committee for Food Standards, Ministry of Health* to consider the *Use of Sorbic Acid and Aureomycin as Food Preservatives*.

* Shri M. R. Joshi, Research Assistant, CSIR scheme (terminated): Nutritive value of palm *gur* (Institute of Science, Bombay), has been awarded the Ph.D. degree by the University of Bombay for his thesis: *Nutritive Value of Palm Gur*.

* Dr. A. B. Sen, Head of the Chemistry Department, Lucknow University, will supervise the research scheme, *Polarographic investigation of known solid complex*, *vice* Dr. A. C. Chatterjee who has retired from the University.

DR. FRANK HAWKING

The well-known specialist in tropical medicine, Dr. Frank Hawking, whose services have been assigned for one year under the Colombo Plan, joined the Central Drug Research Institute, Lucknow, on Sept. 25, 1958.

Prof. Hawking (*b*. 1905) had his education at Oxford and St. Bartholomew's Hospital, London. He worked at the School of Tropical Medicine, Liverpool, for some time and was appointed (1935) Lecturer in Pharmacology at Cardiff. In 1937, he was awarded a fellowship in Tropical Medicine by the Medical Research Council, London, and worked on problems relating to trypanosomiasis and filariasis in East Africa and Nigeria. He joined the Medical Research Council in 1940, where he distinguished himself by publishing a monograph on "The Sulphonamides".

Prof. Hawking came on a tour to India in 1955 and visited institutions engaged in problems relating to malaria, filariasis and leprosy.

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MEETINGS & SYMPOSIA

A meeting of the *Executive Council, Central Glass & Ceramic Research Institute*, Calcutta, will be held at the Institute premises on Feb. 2, 1959 at 11.30 a.m. Lala Shri Ram, Chairman of the Executive Council will preside.

A meeting of the *Metals Research Committee* will be held in the Board Room of the Tata Iron & Steel Co., Jamshedpur, on Feb. 5, 1959 at 11.00 a.m. Shri J. J. Ghandy, Director-in-charge, Tata Industries Ltd., will preside.

Iron and Steel Industry in India

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The following aspects of the subject will be discussed at the symposium:

(1) Raw materials—Iron ore, coal, coke, etc.—their assessment and preparation including ore beneficiation, sintering, coal blending and coking

(2) Physical chemistry of iron and steel production and related theoretical treatment such as, slag metal equilibria, heat-transfer, thermal efficiency of metallurgical processes, heat balance, etc.

(3) Recent technological advances in iron and steel metallurgy

(4) Utilisation of by-products of the industry

(5) Casting and metal-working techniques including hot and cold rolling, extrusion, deep-drawing, wire-drawing, etc.

(6) Present status and future of the industry in India in relation to her Five-Year Plans and world production trends

A large number of scientific and technical papers dealing with above aspects have been received for presentation at the symposium from technologists, metallurgists and research scientists in India and abroad. Distinguished technologists and scientists are expected to attend the symposium.

A Low-Shaft Furnace Pilot Plant for smelting iron with non-coking coals installed at the Laboratory is expected to be in operation at the time.

Nature of Coal

A symposium on the Nature of Coal will be held at the *Central Fuel Research Institute*, Jealgora from Feb. 7 to Feb. 9, 1959. Prof. M. S. Thacker, Director-General, Scientific & Industrial Research, has kindly consented to preside.

The symposium will be held in the following six sessions:

(1) Origin and systematics of coal

(2) Petrographic and X-ray studies

(3) Ultra-fine structure: Sorption of polar and non-polar liquids; heat of wetting; surface area; and solvent extraction

(4) Coal constitution: Physical methods—Density; reflectance; infra-red and ultra-violet spectroscopy; and other methods

(5) Coal constitution: Chemical methods—Oxidation; hydrogenation; hydrogenolysis; halogenation; sulphonation; functional groups; and pyrolysis

(6) Physico-chemical properties—Electrical and magnetic properties; mechanical properties; thermal properties; behaviour on heating; and reactivity

Thirty-five research papers received from scientists from India and different foreign countries will be presented and discussed at the symposium.

Personal

*The following have been appointed, on promotion, Senior Scientific Officers: Grade II, CFRI, Jealgora, with effect from the date given against their names:

Sarvashri N. N. Chatterjee (Sept. 13, 1958); S. Ghosh (Sept. 12, 1958); B. S. Deshmukh (Sept. 12, 1958); and B. B. Baruah (Sept. 15, 1958).

*Dr. P. B. Mathur has been appointed Senior Scientific Officer: Grade II, CECRI, Karaikudi, with effect from Dec. 27, 1958.

*Shri K. R. K. Rao has been appointed, on promotion, Junior Scientific Officer, CDRI, Lucknow, with effect from Dec. 16, 1958.

*Shri M. K. Ghosh has been appointed, on promotion, Junior Scientific Officer, NML, Jamshedpur, with effect from Dec. 29, 1958.

* * *

*Shri D. S. Tandon, Senior Scientific Officer, NML, Jamshedpur, left for U.K. on Jan. 5, 1959 for training in *Electroplating of metals* for a period of six months under the Colombo Plan.

*Shri Y. D. Prasada Rao, Junior Scientific Officer, CECRI, Karaikudi, left for Japan for training on *Electro-winning and refining of metals* for a period of one year under Colombo Plan.

* * *

*Dr. Atma Ram, Director, CGCRI, Calcutta, has been awarded *Padma Sri* by the President of India on the tenth Republic Day (Jan. 26, 1959) for his outstanding contributions in the field of glass and ceramics.

BRIEFS

Tapioca Macaroni Extension Work Published

A brochure presenting a brief picture of the extension work carried out in the Kerala State by the *Central Food Technological Research Institute,* Mysore, on Tapioca Macaroni and various preparations from it, has recently been brought out by the Institute.

The 46-page brochure entitled, *Tapioca Macaroni Goes to the People,* begins with a brief history of the project and the *modus operandi* (public meetings, group discussions, cooking demonstrations, etc. in collaboration with organisations such as N.E.S. Blocks, women's organisations) adopted for effectively bringing home to the people of the state that tapioca could be utilized in a new way to enrich their diet. The brochure, which is the first bulletin of the *Food Science Extension Service* of the Institute draws attention to the utilisation of root crops as an alternative for cereal crops to solve the country's food problem. It gives factual information in regard to the tapioca crop in India and possibilities of its utilisation as a nutritive food material. The composition of tapioca macaroni products developed at the Institute, their processes of manufacture and recipes for preparation of 42 dishes from them have been described. The difficulties encountered in the popularisation of the new product have been specified so that they may be of use for other organisations engaged in carrying the results of research to the stage of consumer acceptance.

Lectures on Signal Glasses

A series of lectures on 'Colour Recognition of Signal Glasses' was organised by the *National Physical Laboratory,* New Delhi from Jan. 12 to Jan. 17, 1959. Officials of the Railway Board, Northern Railway, Railway Inspection Directorate, Indian Air Force and Civil Aviation Centre attended the lectures. Dr. K. S. Krishnan, Director, NPL, inaugurated the series. The introductory lecture on the *Structure of retina of the eye* was given by Sq. Ldr. Jones, Chief Opthalmologist, Indian Air Force. Dr. W. M. Vaidya, Asst. Director (Optics Division), NPL, delivered five lectures on the *Properties of the eye as an optical instrument* and *principles of measurement and basis of standardization of colours in signal glasses.*

NPL, NEW DELHI—The working of the Visual Colorimeter designed at the Laboratory for testing railway signal glasses is being explained to the Railway and Air Force officers

Shanti Swarup Memorial Tournament

The 1958-59 session of the Shri Shanti Swarup Bhatnagar Memorial Tournament organised by the Staff Club of the CSIR Secretariat (President, Shri P. M. Sundaram) was inaugurated by Shri M. Bhakthavatsalam, Minister for Home Affairs, Government of Madras, on Dec. 24, 1958 at the Central Leather Research Institute, Madras. The tournament concluded on Dec. 31, 1958. The Staff Clubs of fifteen national laboratories and the CSIR Secretariat participated in the tournament. The results of the tournament are as follows:

Badminton—NPL, New Delhi (Winners) and CSIR Secretariat, New Delhi (Runners).

Cricket—NCL, Poona (Winners) and NPL, New Delhi (Runners).

Volley-ball—NBG, Lucknow (Winners) and CRRI, New Delhi (Runners).

Tennis—NML, Jamshedpur (Winners) and NPL, New Delhi (Runners).

Table Tennis—CFRI, Jealgora (Winners) and CFTRI, Mysore (Runners).

Prof. M. S. Thacker, Director-General, Scientific & Industrial Research, distributed the prizes at the concluding function presided over by Dr. A. L. Mudaliar, Chairman, Executive Council, CLRI, Madras.

A brochure giving the details of the tournament and a few articles of interest to sportsmen has been published.

Research Schemes Terminated

The following research schemes have been approved for termination with effect from Feb. 28, 1959:

1. *Studies on the utilization of blast furnace slag in cement making*—Dr. D. Lahiri, University College of Science & Technology, Calcutta.

2. *Centrifugal pumps research and testing project with special reference to low head high discharge pump*—The Registrar, Indian Institute of Science, Bangalore.

RESEARCH IN PROGRESS

National Laboratories

Central Fuel Research Institute, Jealgora

Reactivity in Low-temperature Cokes and Chars—As part of the study of the causes of reactivity of cokes and chars, active oxygen groups, surface area and heat of wetting in methanol of high and low rank coals carbonized at different temperatures have been investigated. Maximum concentration of active oxygen groups have been observed in the temperature range 400-500°C. in both types of coal the increase being more pronounced in high rank coals than in low rank ones. Surface area of high and low rank coals is maximum at 800°C. and 600°C. respectively. The heat of wetting of the coals is dependent on their surface area and the active oxygen groups. The investigation leads to the conclusion that the reactivity of low-temperature coke or char is probably due to the presence of high concentration of polar centres (active oxygen groups) in the surface layers—S. P. Nandi, K. A. Kini & A. Lahiri.

Central Drug Research Institute, Lucknow

Drugs in Skin Fungus Infection—Species of *Candida albicans*, *C. tropicalis*, *C. parakrusei*, *C. guillermondi*, *Cryptococcus* sp., *Trichosporon* sp. and *Geotrichum* sp. have been isolated from human faeces and diseased skin lesions. *C. tropicalis*, *C. parakrusei*, *C. guillermondi*, *Cryptococcus* sp., *C. fermentans* and *Rhodotorula* sp. appear to be new records for India. Seventeen strains representing various genera and species were inoculated intravenously in male albino mice. All strains, except those of *C. fermentans* and *Geotrichum* sp., could be reisolated from the kidneys of these animals. Mycostatin, Mysteclin and Multifungin were tested on eleven representative strains. *C. parakrusei*, *Trichosporon* sp. and *Geotrichum* sp. were not completely inhibited by Mycostatin and Mysteclin but the remaining yeast-like fungi were found to be sensitive to both these drugs. Multifungin inhibited completely the growth of only *Rhodotorula* sp. and *Geotrichum* sp. and was ineffective against the other yeast-like fungi—O. P. Srivastava.

Sponsored Research

Mercaptans as Modifiers in Emulsion Polymerisation—Emulsion polymerisation of acrylates and also the copolymerisation of acrylates with tetrachloroethylene at low temperature have been studied.

Kinetic studies of base catalyzed addition of mercaptans to acrylic esters in ethanolic solution at 45°C. indicated that the rate of reaction is dependent on base strength and concentration of catalyst and also the acidity of mercaptans.

Kinetics of methoxy-mercuration of methyl acrylate has been studied and a plausible mechanism established for the reaction, which is found to be of the Second Order—M. L. Das & K. L. Mallick, Jadavpur University, Calcutta.

Hydrography and Plankton Production in Bay of Bengal—Collection of hydrographical data (surface temperature, salinity, turbidity, dissolved oxygen and nutrients) in regard to the waters of Bay of Bengal off Waltair and production of plankton have been in progress.

Production of plankton closely followed the hydrographical conditions, a major peak of production being observed during May, the period of upwelling and a minor peak during November. A wide difference in the composition of the plankton occurred during the two peak periods. Detailed study of the pelagic tunicates which are well known as "indicators" of water masses showed that southerly current during July-November and the northerly current in the January-June period were marked by different pelagic tunicate populations. *Cyclosalpa pinnata*, *Ritteriella amboinensis*, *Salpa maxima* and *S. cylindrica* were the indicators of the southerly current and *Fritillaria borealis*, *F. sargassi* and *F. pellucida* of the northerly currents. The aggregate zooids of *Thalia domocratica* were abundant in the colder and frequent in the warmer waters, while the solitary zooids were abundant in the warmer and frequent in the colder waters—P. N. Ganapati, P. V. Bhavanarayana & D. V. Subba Rao, Andhra University, Waltair.

Safe Rate of Filtration for Sand Filters—Sand filters at present in use in water works in India have been designed to operate at a low rate (80 gal./hr.) without taking into account chlorination of water.

As chlorination of water is commonly practised in India, studies were undertaken to find the safe rate of filtration using experimental wooden filters having thick layer of gravel and fine sand. The physical, chemical and bacteriological tests of the effluents and influents were carried out at filtration rates of 80-150 gal./hr. The experimental filters when run at 100-150 gal./hr. effected about 85 per cent reduction in turbidity, about 90 per cent reduction in *Bacillus coli* and about 95-96 per cent in algal density—S. V. Ganapati & R. S. Dhaneswar, Water Works Laboratories, Delhi Corporation, Delhi.

Research Papers

Solution of the characteristic equation of cylindrical shell—G. S. Ramaswamy & S. Somadev, CBRI, Roorkee. *Curr. Engng Practice*, **3** (1959), 34.

Structures of bismuth oxides formed by heating bismuth film in air—R. S. Aggarwal & A. Goswami, NCL, Poona. *Z. Naturforschg*, **13** (1958), 885-87.

Bifunctional peroxide initiated vinyl polymerisation—R. V. Subramanian & S. L. Kapur, NCL, Poona. *Makromol. Chem.*, **28** (1958), 83.

Dr. J. C. Ghosh Passes Away

It is with deep regret that we announce the demise on Jan. 21, 1959 at Calcutta of Dr. Jnan Chandra Ghosh, Member, Planning Commission, Government of India. He was connected with CSIR ever since its inception.

Born on Sept. 14, 1894 at Purulia (W. Bengal), Dr. Ghosh was educated at the Giridih H.E. School and the Presidency College, Calcutta. He got his M.Sc. degree in 1915 and was appointed lecturer in Chemistry at the University of Calcutta. In 1918, he was awarded Palit scholarship and Premchand Roychand studentship for higher studies in U.K. On his return to India (July 1921), he was appointed Professor and Head of the Department of Chemistry, University of Dacca.

He was Director, Indian Institute of Science, Bangalore (1939-1947); Director-General of Industries and Supplies, Government of India (1947-50); Director, Indian Institute of Technology, Kharagpur (1950-54); and Vice-Chancellor, University of Calcutta (1954-55). In 1955, he was appointed Member, Planning Commission in charge of education, health and scientific research.

Dr. Ghosh was one of the Founder Members of the Indian Chemical Society (1924) and was President of the Society (1935-37). He was associated with various scientific organisations and societies in India in different capacities. He was General President, Indian Science Congress (1939) and President, Indian Association for the Cultivation of Science, Calcutta (1951). As a member of the All-India Council for Technical Education and as the President of the Association of the Principals of Technical Institutions in India, he was largely responsible for shaping the future of technical education in India.

He represented the Government of India on various scientific missions and conferences including Empire Scientific Conference, U.K. (1946); Fourth General Assembly of UNESCO, Paris; and U.N. Conference on Conservation and Utilisation of Natural Resources, Lake Success (1949).

Dr. Ghosh was closely associated with the Council of Scientific & Industrial Research since its inception and rendered valuable service in the progress of the Organisation. He has been a member of the Governing Body of the Council and the Board of Scientific & Industrial Research. Besides, he was member of the First Reviewing Committee (1948) and Chairman of (1) the Special Committee constituted for the implementation of the recommendation of the Second Reviewing Committee and (2) various CSIR research committees.

Dr. B. B. Dey

Dr. B. B. Dey, formerly Honorary Director, Central Electro-Chemical Research Institute, Karaikudi, passed away at Madras on Jan. 17, 1959.

Dr. Dey (b., Nov. 1, 1889) was a student of City College and Presidency College, Calcutta. He took his D.Sc. degree from the London University and joined the Presidency College, Madras, as Professor of Chemistry and was later appointed Principal of the College. He was the first Indian Director of Public Instruction, Madras and was also Director of Biochemical Laboratory, Madras University, for sometime. He was also the first Director of the Central Electro-Chemical Research Institute, Karaikudi.

Dr. Dey published a large number of memoirs in different fields of chemistry, specially electro-organic compounds and natural dyes. He was the author of the book, *Laboratory Manual of Organic Chemistry.*

He was a member of the Academic Council and a Fellow of the Senate of the Madras University. He was a member of the Indian Advisory Board of the Institute of Chemistry and the Council of the Indian Chemical Society.

He was a member of various research committees of the CSIR and an investigator-in-charge of a number of research schemes.

We regret to record the death of Shri K. B. Sen, Member of the Executive Council, Central Fuel Research Institute, Jealgora on Dec. 22, 1958. Shri Sen was former Chief Chemist of M/s F. W. Heilgers & Co., and M/s Bird & Co., Ltd.

Process Ready for Exploitation

CLAY BONDED GRAPHITE CRUCIBLES

The *National Metallurgical Laboratory*, Jamshedpur, has developed an improved process for manufacturing clay bonded graphite crucibles which can be satisfactorily used over a wide range of temperatures in ferrous and non-ferrous foundries. The process (Indian Pat. No. 62352) has been tried on semi-pilot plant scale.

The equipment required is simple and easily available. The total capital outlay for a plant of annual capacity of 300 tons will be Rs. 4.65 lakhs approximately.

Parties interested in undertaking the commercial development of the process may write to the Secretary, National Research Development Corporation of India, Mandi House, New Delhi-1.

Processes Leased Out

The following processes developed at national laboratories have been leased to industry for commercial development. The names of the parties to whom the processes have been leased are given against the processes.

1. Boron free enamels (CGCRI, Calcutta)—M/s *Ceramic Sales Corporation Ltd.*, Calcutta.
2. Duplicating, printing and allied black inks (NPL, New Delhi)—M/s *Mysore Lac and Paint Works Ltd.*, Mysore.

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CSIR news
NEW DELHI—VOL. 9, NO. 3, FEB. 14, 1959
MAGHA 25, 1880

MEETINGS & SYMPOSIA

A meeting of the *Publications Committee* will be held in the CSIR Secretariat, New Delhi, on Feb. 20, 1959 at 11.00 a.m. Prof. M. S. Thacker, Director-General, Scientific & Industrial Research, will preside.

A meeting of the *Chemical Research Committee* will be held at the CSIR Secretariat, New Delhi, on Feb. 24, 1959 at 3.00 p.m. Prof. M. S. Thacker, Director-General, Scientific & Industrial Research, will preside.

A meeting of the *Executive Council, RRL, Hyderabad*, will be held at the Institute premises on Feb. 24, 1959 at 3.30 p.m. Shri Sanjiva Reddy, Chief Minister, Andhra Pradesh, will preside.

A meeting of the *Executive Council, CBRI, Roorkee*, will be held at the CSIR Secretariat, New Delhi, on Feb. 27, 1959 at 10.00 a.m. Shri K. C. Reddy, Union Minister for Works, Housing & Supply will preside.

Tanning as a Small Scale and Cottage Scale Industry

LIBRARY

A symposium on Tanning as a Small Scale and Cottage Scale Industry will be held at the *Central Leather Research Institute*, Madras during Feb. 15—17, 1959. Prof. M. S. Thacker, Director-General, Scientific & Industrial Research, has kindly consented to inaugurate the symposium. Dr. A. Lakshmanaswamy Mudaliar, Vice-Chancellor, University of Madras and Chairman, Executive Council, CLRI, Madras, will preside.

About fifty technical papers pertaining to the various aspects of small scale and cottage scale tanning industries will be presented and discussed in three technical sessions presided over by Shri Vaikunth Lal Mehta, Chairman, Khadi & Village Industries Commission; Shri M. J. Jamal Moideen, Vice-Chairman, Leather Export Promotion Council; and Shri Ashfaq Hussain, Commissioner, Small Scale Industries, Government of India. The concluding session is to be presided over by Shri C. Subramaniam, Minister for Finance, Government of Madras, when a summary of the suggestions made by the delegates will be presented.

Personal

*Shri R. Singhal has been appointed Senior Scientific Officer: Grade II, Central Mechanical Engineering Research Institute (CMERI), Durgapur, with effect from Dec. 27, 1958.

*Shri K. D. Banerjee, Administrative Officer, CECRI, Karaikudi, has been transferred to CMERI, Durgapur, with effect from Jan. 16, 1959.

*Shri J. Guruswami, Junior Scientific Officer, CMERI, Durgapur, has been appointed Administrative Officer, CECRI, Karaikudi. He was relieved of his duties from CMERI with effect from Jan. 16, 1959.

* * *

*Shri B. C. Majumdar, Senior Scientific Officer, CRRI, New Delhi, who had been to U.S.A. under the T.C.M. programme, resumed charge on Nov. 3. 1958. During his five months' stay abroad, he attended 6-weeks' course on asphalt technology at the A. & M. College of Texas, Texas and worked at various States laboratories on design of dense graded asphaltic concrete mixture, bituminous road and airport construction and bituminous pavement.

*Shri N. S. Bawa, Junior Scientific Officer, CRRI, New Delhi, on his return from U.K. after completion of one year's training under Colombo Plan, resumed duty on Oct. 24, 1958. He worked on problems relating to concrete materials and concrete roads at various research laboratories in U.K.

Some of the distinguished guests at the reception held by Prof. M. S. Thacker at his residence on Jan. 24, 1959 in honour of H.R.H., the Duke of Edinburgh

BRIEFS

Science Pavilion Awarded Gold Medal—"India 1958" Exhibition

The *Science Pavilion* organised by the Council of Scientific & Industrial Research has been awarded the *Gold Medal* for the best presentation of theme in the Science and Technology Centre of the "India 1958" Exhibition.

The President of India awarded the prizes to winners on the Exhibition Grounds on Dec. 31, 1958. Shri P. M. Sundaram, Secretary, CSIR, received the prize on behalf of the Council.

Low-Grade Manganese Ores—Beneficiation Studies

Comprehensive studies on the beneficiation of different types of low-grade manganese ores available in India have been in progress at the National Metallurgical Laboratory, Jamshedpur. The results of the studies carried out so far have been compiled by Shri P. I. A. Narayanan & Shri N. N. Subrahmanyan and have been published.

The 184-page monograph is divided into 6 chapters. In the introductory chapter, the extent and nature of manganese ore deposits in various localities of Indian states (Andhra, Bihar, Bombay, Madhya Bharat, Madhya Pradesh, Mysore, Orissa and Rajasthan) is described. For the sake of comparison, a brief account of occurrences of the ore in foreign countries is included. The production of manganese ore in different countries of the world during the years 1950 to 1956 with break-up figures for various localities in different states in India, total imports of ores by principal countries of the world as compared to imports from India and the prices of different grades of Indian ores are detailed in Chapter Two.

The metallurgical and non-metallurgical uses of manganese ores with specifications for each particular use are described in Chapter Three. Chapter Four details the hydrometallurgical, pyrometallurgical and ore-dressing methods employed for the beneficiation of low-grade ores. Ore-dressing methods practised in India have been recorded in great detail. Investigations carried out by the National Metallurgical Laboratory, alone and in collaboration with the Indian Bureau of Mines, on the beneficiation of simple, ferruginous, garnetiferous and complex manganese ores obtained from different localities of Andhra, Bombay, Madhya Pradesh, Mysore, Orissa and Rajasthan have been recorded in Chapter Five. Methods adopted for up-grading of the four different categories of ores are described. Chapter Six summarises the best results achieved in the investigations in a tabulated form and recommends the methods and equipment which may be adopted for up-grading Indian manganese ores on a large-scale and for the production of ferro-manganese on pilot plant scale.

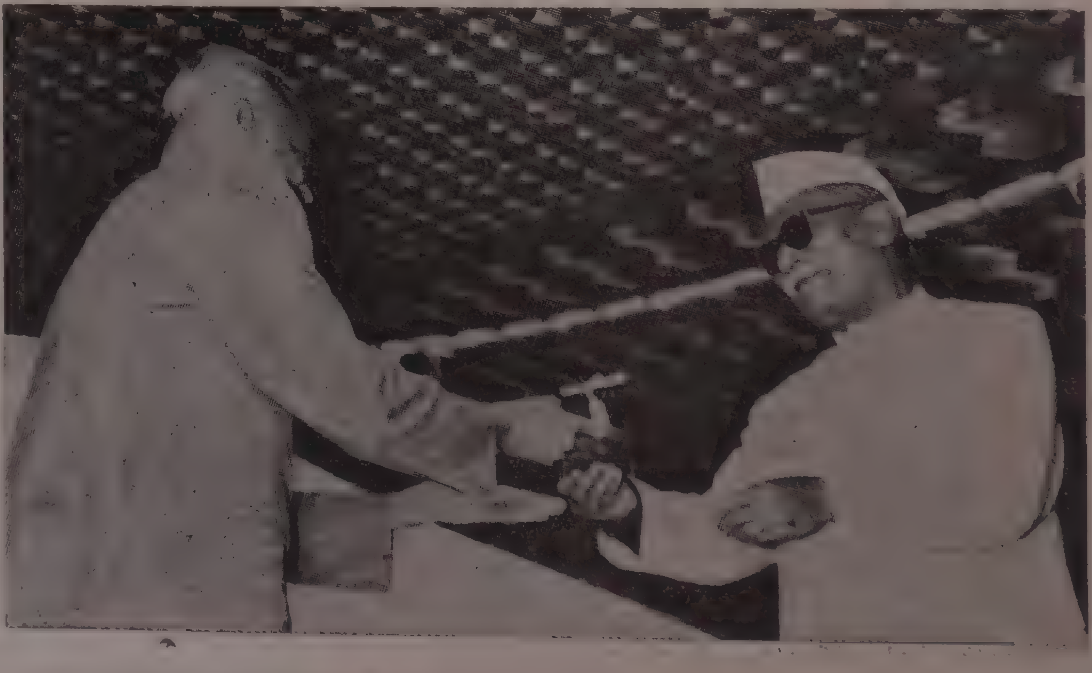
The publication contains 130 tables of useful data (sieve analysis, washing, jigging and tabling, flotation, reduction, magnetic separation, wet screening, etc.), 53 illustrations (graphs representing Mn-Fe ratio *vs* Mn recovery from ore samples, microphotographs of ore samples, sketches of apparatus and equipment, etc.), and 8 flow sheets (showing various stages of concentration, dressing and modified methods for beneficiation of different grades of ores). A map showing the important manganese ore-producing areas in India and a list giving the addresses of principal ore producers in India are appended. The publication is expected to serve as a hand-book to research workers and those engaged in industry and trade concerned with manganese ores either for export or as raw materials for the production of ferro-alloys.

Electrolytic Cells—CECRI Symposium

The three-day symposium on Electrolytic Cells organised by the *Central Electrochemical Research Institute*, Karaikudi ended on Jan. 1, 1959. The symposium was inaugurated by Shri C. Subramaniam, Minister for Finance and Education, Government of Madras and Chairman, Executive Council of the Institute.

About forty scientists and technologists from India and abroad including Dr. M. J. Allen, Director, Research Laboratory, CIBA Pharmaceutical Laboratories, U.S.A.; Prof. L. I. Antropov, UNESCO Expert in Electrochemistry at the Indian Institute of Technology, Bombay; and Dr. Sueo Abe, Chief Engineer, Origin Electric Co. Ltd., Tokyo, participated in the symposium.

Forty research papers pertaining to different aspects of electrolytic cells including industrial electrolytes, electrometallurgical processes and recent advances in fundamental aspects of electrolytic cells were presented and discussed in six technical sessions.



"INDIA 1958" EXHIBITION—Shri P.M. Sundaram receiving the Gold Medal awarded to CSIR for the best presentation of theme

RESEARCH IN PROGRESS

National Laboratories

Central Fuel Research Institute, Jealgora

Bulk Density of Coal—Bulk density of a coal charge is an important factor affecting the operation of the coke ovens and the quantity and quality of coke produced. The influence of various factors, *e.g.*, moisture, mode of crushing, size of grain and addition of oil on the bulk density of coal has been investigated.

The bulk density is minimum at 4-6 per cent of moisture depending on the fineness of the coal. Controlled crushing of the coal in stages increases the bulk density by 4-5 lb./cu. ft. (*i.e.* 2.5-12 per cent) in the moisture range of 6-12 per cent compared to the bulk density of coal crushed to the same maximum fineness in a single stage. Addition of oil up to 0.5 per cent increases the bulk density of the moist coal to an appreciable extent. The maintenance of moisture in the range of 8-10 per cent is industrially economical.

Sponsored Research

Polyvaccine for Typhoid, Cholera and Dysentery—Investigations were carried out to prepare a mixed 'depot vaccine' from the antigenic portions of typhoid, cholera and dysentery bacteria.

Antigens were prepared by usual methods from (i) *Salmonella typhi;* (ii) *S. paratyphi A;* (iii) *S. paratyphi B;* (iv) *Shigella paradysenteriae* Flexner; (v) *Sh. sonnei;* (vi) mixed culture of *Inaba* and *Ogawa* sub-types of *Vibrio cholerae;* and (vii) *Inaba* sub-type of *V. cholerae.* The antigens in clear solution were freeze-dried, sealed in vacuo and stored in cold.

Depot antigens from the freeze-dried antigens were prepared by dissolving them in 0.7 per cent saline, centrifuging to remove the insoluble matter and adsorbing the dissolved antigen on calcium phosphate.

Protection tests performed in mice using 2, 1 and ½ lethal dose of the corresponding live organism have shown that protective depot vaccine can be prepared from *S. typhi; S. paratyphi A* and *B* and *Sh. paradysenteriae.* Agglutinin response in rabbits showed that the cholera depot vaccine produced significant amount of antibodies. *Sh. paradysenteriae* Flexner 'depot vaccine' not only produced a good titre of corresponding antibodies but also had some synergistic effect on the production of antibodies against *V. cholerae*—B. MUKERJI & K. S. MALIK, Central Drug Research Institute, Lucknow.

Esterification and Etherification of Jute Fibre—The use of jute fibre for preparing furnishing or other utility material is restricted due to change in its colour on prolonged exposure to sunlight. Esterification and etherification are reported to stabilise the colour change.

Investigations have been undertaken to develop suitable methods for acetylation and etherification of jute fibre and study the properties of the modified fibres with special reference to the effect of exposure to light.

Two methods of acetylation, liquid phase and vapour phase, have been studied. In the liquid phase, a mixture of acetic acid and acetic anhydride in presence of a catalyst (zinc sulphate or sulphuric acid) has been tried for varying periods and temperatures. Sulphuric acid has been found to be very effective, even at room temperature for the acetylation of jute, while the use of zinc sulphate necessitated a high reaction temperature for a substantial introduction of acetyl group. In vapour phase, the jute samples impregnated with a catalyst (zinc sulphate or potassium acetate) were suspended in acetic anhydride vapour for various intervals of time. The results indicated that the extent of acetylation depended not only on the nature of catalyst but also on the reaction temperature.

For cyanoethylation, the jute samples were treated with caustic soda solution of varying concentrations prior to reaction with acrylonitrile at room temperature. The results so far obtained have shown that the concentration of alkali employed in the pretreatment exerted a marked effect on the cyanoethylation of jute—A. B. SEN GUPTA & S. K. DEB, Indian Jute Mills Research Association, Calcutta.

NPL, NEW DELHI—H.R.H., the Duke of Edinburgh examining an interferometer, during his visit to the Laboratory on Jan. 27, 1959

IN PARLIAMENT

Feb. 9, 1959—The President, Dr. Rajendra Prasad, in his inaugural address to the joint meeting of the two Houses of Parliament referred in these words to the work of the Council of Scientific & Industrial Research.

"My Government have taken steps in several directions to implement the purposes contained in the Scientific Policy Resolution of the 4th March 1958. Close liaison exists between the National Laboratories and Industry. Laboratory training courses, and grants-in-aid schemes for research promote these relations as well as the scientific approach and the availability of scientifically skilled manpower. It has been decided to establish National Laboratories for research and development in Mechanical Engineering at Durgapur and Public Health Engineering at Nagpur."

* * *

Feb. 12, 1959—Shri Humayun Kabir, Union Minister for Scientific Research and Cultural Affairs, gave details of the progress made in the setting up of the Central Public Health Engineering Research Institute.

The Minister said: "The office of the Institute has shifted to Nagpur. Plans and estimates for the building of the Institute at Nagpur are under preparation. Field Research Centres are being set up at Delhi, Lucknow, Poona and Hyderabad. Recruitment of scientific and other staff for the Institute as well as the Field Centres is being done. Necessary equipment and materials are also being procured."

"The Bombay Government has offered land free of cost for setting up this Institute and have also provided temporary accommodation for the Institute."

The present address of the Institute is 70/1, Civil Lines, Nagpur.

* * *

Feb. 12, 1959—Dr. M. M. Das, Union Deputy Minister for Scientific Research and Cultural Affairs, stated in Parliament that the construction of the workshop for the Birla Industrial & Technological Museum in Calcutta had started. A temporary workshop had been set up inside the museum building itself, and the preparation of models departmentally had started. The necessary staff had been recruited.

"A few models have been received from manufacturers and business concerns as gifts for permanent display in the museum."

Central Mechanical Engineering Research Institute

The offices of the Central Mechanical Engineering Research Institute have shifted from New Delhi to Durgapur and have been temporarily located at D-I/6, West Bengal Government Colony, Durgapur Coke Oven, P.O. Durgapur, Dist. Burdwan (West Bengal).

Research Schemes Terminated

The following research schemes have been approved for termination with effect from Feb. 28, 1959.

1. *Studies on correct postures in industrial workers for maximum efficiency with the help of electromyograph*—Dr. M. N. Das, Calcutta University, Calcutta.

2. *Cytogenetical studies on animal chromosomes after various kinds of physical and chemical treatment*—Dr. S. P. Raychaudhuri, Calcutta University, Calcutta.

3. *Development of sugar cane wax*—Dr. K. N. Menon, University of Madras, Madras.

Processes Released Free for Exploitation

The following four processes developed at the *National Metallurgical Laboratory,* Jamshedpur, have been released free to the industry. The Indian Patent numbers of the processes are given in brackets:

1. Chemical polishing of aluminium (47401).

2. Improvement in or relating to metallisation of non-conductors (45579).

3. Improvements in or relating to the electroplating of metals on aluminium or its alloys (51524).

4. Brass plating from non-cyanide bath (45565).

Parties interested in the commercial development of the processes may contact the Director, National Metallurgical Laboratory, Jamshedpur.

NEW PUBLICATIONS

BENEFICIATION OF LOW-GRADE MANGANESE ORES OF INDIA

by

P.I.A. Narayanan & N. N. Subrahmanyan
National Metallurgical Laboratory, Jamshedpur

Royal 8 vo, pages : viii+184 Price: Rs. 10.00

For copies write to:

The Under Secretary, Publications Directorate, CSIR,
2-Old Mill Road, New Delhi-1

TAPIOCA MACARONI GOES TO THE PEOPLE

[Bulletin 1, Food Science Extension Service]

by

V. Balu & H.A.B. Parpia
Central Food Technological Research Institute, Mysore

Printed by the G.M. Govt. of India Press, New Delhi, and published by the Council of Scientific & Industrial Research, Old Mill Road, New Delhi-1

CSIR news

NEW DELHI VOL. 9, NO. 4, FEB. 28, 1959
PHALGUNA 9, 1880

LOW-SHAFT FURNACE GOES INTO PRODUCTION

The pilot low-shaft furnace plant, installed by the National Metallurgical Laboratory, Jamshedpur, for producing pig iron from Indian iron ores and non-coking coals, was inaugurated on Feb. 5, 1959 by Shri Swaran Singh, Union Minister for Steel, Mines & Fuel. Distinguished scientists and technologists were present at the function.

Erected on a site, nearly 12 acres in area—adjacent to the *Tatanagar Foundry Co. Ltd.*, Jamshedpur—, the plant has a production capacity of 15 tons of pig iron per day. The plant was supplied by *Demag-Humboldt Needer-schachtofen,* Duisburg, West Germany. The capital investment on the project is so far Rs. 27 lakhs; a recurring expenditure of Rs. 10 lakhs, spread over a period of 5 years, has been provided.

The possibilities for producing commercial grades of pig iron from inferior grades of Indian iron ores (like soft ores, ore fines, and magnetite) and non-coking high-ash coals or carbonised lignite will be investigated with the help of this plant. These raw materials are available in abundance, but are unsuitable for exploitation by the conventional blast furnace process.

NML, JAMSHEDPUR—Dr. B. R. Nijhawan, Director, delivering the Welcome Address at the inauguration of Low-shaft Furnace Pilot Plant on Feb. 5, 1959

Regional Stations to be Established by CFTRI

A scheme for establishing six main Regional Stations (at Delhi, Poona, Gauhati, Kodur, Simla and Saharanpur) and four Sub-Regional Stations (at Jadavpur, Nagpur, Trichur and Kulu) for researches on the preservation of fruits and vegetables has been approved. The research stations will function under the Central Food Technological Research Institute, Mysore. The Stations will undertake investigations on the varietal suitability of fruits and vegetables for processing and on the problems of the preservation industry on a regional basis. The Stations will establish close contacts with industry and undertake training and demonstration programmes in fruit and vegetable preservation.

Personal

*Dr. A. P. Mitra has been appointed, on promotion, Asst. Director (*Radio Propagation Unit*), NPL, New Delhi, with effect from Oct. 10, 1958.

Dr. Mitra, D.Sc. (b. Feb. 21, 1927) took his M.Sc. degree in Physics from the Calcutta University and joined the ionospheric research group, under the direction of Prof. S. K. Mitra. He then visited Australia and worked in the Radio Physics Division, CSIRO, Sydney (1951-52); later, he toured in U.S.A. as Visiting Professor of Engineering Research, Pennsylvania University (1952-53). He was appointed Secretary, CSIR Radio Research Committee (1954) and organised the work of the Radio Propagation Unit at NPL (1956). He was appointed Secretary, Indian National Committee for the International Geophysical Year.

Dr. Mitra has published a large number of research memoirs on radio propagation, upper atmosphere, geomagnetism and photochemistry. He is one of the Principal Consultants to the World-wide Soundings Committee and a Consultant to the Ionospheric Research Laboratory, Pennsylvania University; member, World Committee on Rockets and Satellites; and official member from India on various Commissions of the International Scientific Radio Union.

Dr. Mitra has represented India in various international conferences, meetings and symposia on radio physics and radio astronomy.

* * *

*Shri M. S. Venkatachalapathy, Senior Scientific Assistant, CECRI, Karaikudi, left for Poland on Jan. 18, 1959, for specialisation in *Electro-Organic Chemistry* under the United Nations Fellowship Programme.

* * *

*Prof. S. R. Mehra, Director and Dr. H. L. Uppal, Asst. Director, CRRI, New Delhi have been awarded the *Indian Roads Congress Medal* for their paper entitled, *The Importance of Sub-grade Compaction in the Design of Flexible Pavement*, published in the Journal of Indian Roads Congress.

(Contd. on p. 4, col. 2)

ENERGY PRODUCTION AND UTILIZATION

Shri Alladi Krishnaswamy Iyer Memorial Lectures

Prof. M. S. Thacker, Director-General, Scientific and Industrial Research, dealt with energy resources and the patterns of their development and utilization in a series of two lectures delivered under the auspices of the Andhra University at Waltair on Feb. 18 & 19, 1959.

Tracing the history of man's attempts to harness different forms of energy through the ages, Prof. Thacker observed that 'the hunt for newer sources of energy is a continuing activity of man'. The average world energy consumption has been increasing at the rate of 2·2 per cent per annum since 1860 and is now of the order of 3 per cent. This increase has been largely due to the growth of the world population and increased industrial productivity. The factor that limits the development of more energy for meeting the continuing demand for power is not the availability of resources, but the availability of capital.

Dealing with India and her energy problems, Prof. Thacker observed that of the total of 225 million tons of coal equivalents energy consumption in India, non-commercial sources, like fuel wood and farm wastes, form the major part (80 per cent), and coal is the major commercial source of energy. The principal energy consuming blocks at present (in the order of their quantitative demand) are: domestic; transport; electric power; iron and steel; and process industries. This order is not likely to change radically for some time to come; the demand of the domestic sector is not expected to alter considerably, but that from others will expand.

Presenting a broad, tentative pattern for energy production in India during the successive Five-Year Plans, Prof. Thacker stated that by 1975, 80 per cent of the total energy requirements may be met from commercial sources—coal, natural oil, hydro-power, synthetic oil and nuclear power. There are physical limitations to the mining of large tonnages of coal; further, coal will be increasingly utilised as a raw material for the chemical industry and there will also be considerable depletion of coal resources. Natural oil holds prospects of becoming an important source of energy. Nuclear power technology is making rapid strides in India, and is expected to make a significant contribution to the energy pool by then.

Iron and Steel Industry in India—NML Symposium

The four-day symposium on Iron and Steel Industry in India, organised by the *National Metallurgical Laboratory*, Jamshedpur, ended on Feb. 7, 1959. Forty delegates from U.K., U.S.A., France, Germany, Austria, Belgium, Japan and Australia, and leading industrialists and scientists of the country took part in the deliberations. Prof. M. S. Thacker, Director-General, Scientific & Industrial Research inaugurated the symposium. Shri J. J. Ghandy, Director-in-charge, *Tata Industries Ltd.* and Chairman, Executive Council of the Laboratory presided over the inaugural session.

Thirty-seven papers were presented and discussed in the course of 7 technical sessions.

Dr. B. R. Nijhawan welcomed the delegates to the symposium. In the course of his address, Dr. Nijhawan referred to the work carried out at the Institute on raw materials and technology of iron and steel industry, and emphasised the importance of steel production for the nation's economic and industrial progress.

The occasion was marked by the publication of the Inaugural Issue of the quarterly *NML Technical Journal*. The 126-page issue (Vol. 1, No. 1, February, 1959) is exclusively devoted to the proceedings of the Symposium.

Technical Manpower Bulletin

The National Register Unit of the CSIR has started a monthly bulletin entitled *Technical Manpower* for disseminating current data of the National Register and for discussing topics on scientific and technical manpower.

The first issue (January 1959) of the 4-page Bulletin contains brief outlines of the National Registers of scientific and technical personnel in India, U.S.A. and U.K. and information on the 'Scientists Pool' created by the Government of India and administered by CSIR. The bulletin gives the analysis of employment-unemployment figures for 25,157 persons in 52 different fields of science, engineering, technology and medicine.

The current Register contains particulars of 2,347 Indian scientists and other specialists who enrolled themselves from foreign countries up to Dec. 31, 1958; countrywise and subject-wise break-up figures for the registrants are given. Two more Directories of technical personnel trained abroad have been brought out recently. Directory No. E-5 contains the particulars of 207 engineers and Directory No. ST-5 contains details relating to 155 scientists and technologists.

Salt That Is Common

The Publications Directorate of the CSIR has brought out a popular folder on the Central Salt Research Institute, Bhavnagar entitled, *Salt That Is Common*. The publication, planned for mass distribution, brings out the importance of salt in everyday life and in industry, and seeks to create an awareness of the problems of the salt industry in the country.

Sunspot Numbers During 1959

The Indian National Committee for IGC has issued predictions of the 12-months running Sunspot numbers for the period of the International Geophysical Cooperation (IGC). The peak of the Sunspot cycle was reached in March 1958 with a value of 200. The current value is 163 and it will progressively decrease, reaching a value of 135 in December 1959.

* * *

Dr. J. C. Roy, Reader, Department of Chemistry, University College of Science & Technology, Calcutta will supervise the work of the scheme: *Large scale production of mycobacillin*, in operation at the College during the absence abroad of Dr. S. K. Bose.

RESEARCH IN PROGRESS

National Laboratories

Central Glass & Ceramic Research Institute, Calcutta

Use of Mica in Paints—Preliminary studies carried out at the Institute on the use of mica in primers and anticorrosive paints have shown that costly pigments like red lead, red oxide, zinc chrome and zinc dust used in paint formulations can be substituted by mica after some modification without any deleterious effects on covering power, brushability and other properties of the paint. The addition of mica in paint formulations improves its flexibility, adhesion, scratch hardness and corrosion resistance.

A decorative mica based water-emulsion paint has also been developed for interior use. Investigations have been initiated on the use of mica in fire-retarding and road marking paints.

Sponsored Research

Production of Vitamin B_{12} by Streptomyces griseus and S. olivaceus—Conditions have been established for the optimum yield of vitamin B_{12} in media containing proteins of vegetable and animal origin. Shrimp protein and defatted mustard seed cake give the highest yield (1·5 mg. per litre of broth). A 200-fold concentration of the vitamin has been achieved. A new analogue of vitamin B_{12} has been obtained by culturing *S. olivaceus* in a synthetic medium containing *o*-phenylene diamine.

The utilization of different forms of nitrogen (total, amino and ammonia) from the medium during the growth phase of *S. griseus* and *S. olivaceus* has been studied. Glycine and threonine—which are the precursors of vitamin B_{12} –are rapidly utilized.

Manometric studies using resting cells of *S. griseus* indicate that the tricarboxylic acid cycle is operative. Metabolic studies suggest that the glycolytic and the pentose phosphate pathways of glucose breakdown are operative in *S. griseus* and *S. olivaceus* during the anaerobic and the aerobic growth respectively—S. C. Roy & P. K. Maitra, Calcutta University, Calcutta.

Indian Gymnosperms—Morphological and embryological studies on *Gnetum gnemon* and *Cephalotaxus drupaceae* have been in progress for sometime in the Botany laboratories of the Delhi University. Detailed observation has shown that the pollen grains of *Gnetum* possesses a prothallial cell. The female gametophyte is tetrasporic although according to previous reports it is either monosporic or bisporic. The early stages in the embryogeny of *G. gnemon* have been studied in detail for the first time.

The maturation of archegonium in *C. drupaceae* seems to have some relationship with the incoming pollen tube. Four zones have been differentiated in the apical meristem. The size of the apical dome and the extent of various zones is variable in different seasons. The dome of the apex is largest during October and smallest during July—P. Maheswari, (Miss) Madhu Lata & Hardev Singh, Delhi University, Delhi.

Phosphatides in Vegetable Oils and Cakes—Cottonseed, groundnut, sesame and mustard oils and cakes contain considerable quantities of phosphatides recoverable in high yields. Groundnut and cottonseed oils are rich sources of phosphatides (groundnut, 0.24—1.47; and cottonseed, 1.18—2.74 per cent). Among the solvents tested, a 3:1 mixture of pegasol and ethanol was found to be the best, followed by pegasol + chloroform (3:1), benzene + ethanol (4:1), chloroform, benzene, S.B.P. spirit, hexane and pegasol.

The principal phosphatide of groundnut and cottonseed oils is cephalin. Lecithin is present in somewhat smaller concentration—K. V. Rao, A. Jagipantulu & K. S. Murti, Oil Technological Institute, Anantapur.

Preservation of Fruits and Vegetables—Studies on the varietal suitability of green mango, pea and tomato of West Bengal for preservation have been carried out.

Slices of commercial varieties of green mango were treated with sodium chloride, with and without the addition of calcium chloride. Equilibrium in salt uptake was reached in 7-8 weeks. With the increase in salt uptake, the total acid content of slices comes down by over 50 per cent, but the lactic acid content which is *nil* in fresh green mango increases with storage. Lactic acid is formed during pickling; this improves the flavour, but softens the texture of slices. The addition of calcium chloride in 1 per cent considerably improves the texture.

Storage studies on canned peas have shown that of the 5 varieties studied, NP 29 IARI gives the best canned product.

Six varieties of tomato pulp were canned and stored. The original colour of the pulp appreciably faded in all cases. The loss of ascorbic acid varied from 30 to 40 per cent as a result of storage for 6 months at room temperature; the loss was comparatively less in Marglobe and Southerns' Best varieties. The pectin content and viscosity of pulp decreased with storage. The Marglobe variety was found to be the best for preparing canned tomato pulp—A. N. Bose, K. Das & S. B. Lodh, Jadavpur University, Calcutta.

RESEARCH SCHEMES COMPLETED

The following research schemes have been approved for termination, on completion of work, with effect from Feb. 28, 1959.

1. *Essential oil of Canarium euphallum resin*—Dr. A. N. Saha, University College of Science & Technology, Calcutta.
2. *Determination of heat resistance of spores of food spoilage bacteria of significance to canning industry*—Dr. A. N. Bose, College of Engineering & Technology, Calcutta.
3. *Properties of capillary-held liquids*—Dr. B. R. Puri, Panjab University, Hoshiarpur.
4. *Recovery of sulphur from pyrite bearing coals*—Prof. S. B. Pandya, Bombay University, Bombay.

IN PARLIAMENT

Feb. 17, 1959—Shri Humayun Kabir, Union Minister for Scientific Research and Cultural Affairs informed the Lok Sabha that the proposal for setting up a transonic/supersonic wind tunnel at Bangalore at an approximate cost of Rs. one crore has been approved by the CSIR.

The Minister added that the full scale tunnel will be located at Bangalore on a suitable site close to the Hindustan Aircrafts (Private) Ltd. The work for the major Wind Tunnel Project is to be carried out in the following three phases: *Phase I*—The construction of a small scale pilot tunnel; *Phase II*—The detailed design of the full scale tunnel components and a 6 component wind tunnel balance; and *Phase III*—The actual construction of the full scale tunnel.

"The work of phases I and II is to be undertaken by the Aeronautical Engineering Department of the Indian Institute of Science, Bangalore, and for this purpose a grant of Rs. 3.50 lakhs has already been sanctioned".

"The work of Phase III is initially to be undertaken by an Engineering Team, which is to be set up 6 months after the initiation of Phase I work. Detailed phased programme of Phase III will be finalised later."

* * *

Feb. 17, 1959—In reply to a question by Shri Naval Prabakar in the Lok Sabha, the Union Minister for Scientific Research and Cultural Affairs laid the following statement on the table of the House giving them the results of experiments conducted on plants at the NBG, Lucknow.

"As a result of surveys carried out by it in the country, the National Botanic Gardens, Lucknow, has collected a large number of medicinal plants, aromatic plants and plants of other economic importance. Nearly 10,000 specimens of plants have been labelled and registered and about 7,000 have been identified. Systematic studies regarding the effect of climate on 16 varieties of *Jasminum* are in progress. A large collection of *Rauvolfia serpentina* has been made and propagation of the plant by seed has been fairly successful. Cross-breeding experiments in small flowering types of Petunia (from America) have resulted in the production of new types of Petunia with a range of attractive colours from deep red to pale blue."

"A process for the isolation of an active compound named lancamarone from *Lantana camara* known as *Ghaneri* in Bombay State, a common weed which is considered as a nuisance in the forest areas throughout the country, has been developed and patented. The compound may be useful as a fish-poison, cardio-active principle and in the synthesis of therapeutic compounds."

"Useful work has been done on the reclamation of *usar* lands (alkaline lands). Investigations have shown that the use of weeds like *Argemone* and addition of green manure to soil and adoption of a suitable cropping scheme are beneficial for reclamation of alkaline soils for cultivation of crops. It has created hope of reclaiming extensive lands in different parts of the country and especially in Uttar Pradesh. The Government of Uttar Pradesh and the Government of India are following the results with interest and examining the possibility of extending the work as far as possible."

PERSONAL

(*Contd. from p. 1, col. 3*)

*DR. A. LAHIRI, Director, CFRI, Jealgora, has been appointed a member of the panel of experts for *Mining and Fuel Technology* of the Post-graduate Development Committee, set up jointly by the *All India Council for Technical Education* and the *University Grants Commission*.

*DR. S. PARTHASARTHY, Asst. Director, NPL, New Delhi, has been elected *Sectional President* (Physics Section), *Indian Science Congress*, Bombay Session, 1960.

*SHRI A. ZAMAN, Chairman, Coal Board, has been nominated Chairman, Executive Council, CMRS, Dhanbad, *vice* Shri P. M. Nayak.

*KUMARI S. S. WARAVDEKAR, Senior Research Assistant, *Unit for testing cancer-producing and cancer-inhibiting substances* (Indian Cancer Research Centre, Bombay) has been awarded the *Shakuntala Amir Chand Prize* (1958) by the Indian Council of Medical Research for her paper, *Biological Testing of Sulphur Isosters of Carcinogenic Hydrocarbons*, published in the Journal of the National Cancer Institute, U.S.A.

*The following officers have been nominated members of Committees/Panels of the *Indian Standards Institution*:

DR. V. SUBRAHMANYAN, Director, CFTRI, Mysore—*Composition of Tea* Sectional Committee.

DR. D. S. BHATIA, Asst. Director, CFTRI, Mysore—*Yeast* Sub-Committee and *Groundnut Cake Flour* Sub-Committee (Convener).

SHRI S. K. MAJUMDAR, Senior Scientific Officer, CFTRI, Mysore—*Composition of Pest Control Products* Sectional Committee.

Dr. N. B. Hutcheon

Dr. N. B. Hutcheon, Deputy Director (Building Research), National Research Council, Canada, has been working at the Central Building Research Institute, Roorkee, since Dec. 2, 1958, on a 3 months' assignment under the Colombo Plan.

Dr. Hutcheon (*b.*, 1911) received his education in Western Canada. After post-graduate training at home and abroad, he joined the University of Saskatchewan and taught mechanical engineering to under-graduate and post-graduate students. He carried out researches on problems connected with building engineering, and later joined the National Research Council.

Dr. Hutcheon is the author of several research papers on building materials, heat transfer, moisture movement and allied subjects.

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CSIR news

PHALGUNA 23, 1880

COAL DUST GASIFICATION PLANT INAUGURATED

The Koppers-Totzek type coal dust gasification pilot plant (capacity, 250 lb./hr.) fabricated at the Central Fuel Research Institute, Jealgora, was inaugurated by Prof. M. S. Thacker, Director-General, Scientific & Industrial Research, on Feb. 6, 1959. Distinguished scientists and technologists were present at the occasion.

This type of plant, which is being used on the industrial scale in several countries of the world, consists of a coal preparation unit, gasifier, gas cooling and dedusting units and an oxygen plant. It works on "Co-current principle".

The plant is useful for studying the process variables in coal gasification and the optimum working conditions for using various inferior grades of Indian coals.

MEETINGS

A meeting of the *Executive Council, NCL,* Poona, will be held at the Laboratory on March 20, 1959 at 10.00 a.m. Shri Manubhai Shah, Union Minister for Industries, will preside.

A meeting of the *Executive Council, CECRI,* Karaikudi, will be held at the CLRI, Madras on March 21, 1959 at 2.00 p.m. Shri C. Subramanian, Minister for Finance and Education, Govt. of Madras, will preside.

A meeting of the *Executive Council, IIBEM,* Calcutta, will be held at the Institute on March 30, 1959 at 5.00 p.m. Dr. B. C. Roy, Chief Minister, West Bengal, will preside.

A joint meeting of the *Scientific* and *Engineering Sub-Committees* of the Board of Scientific & Industrial Research will be held in the Conference Room of the CSIR Secretariat, New Delhi, on March 29, 1959 at 10.00 a.m.

A meeting of the *Finance Sub-Committee* will be held in the Conference Room of the CSIR Secretariat, New Delhi, on March 29, 1959 at 4.00 p.m.

A meeting of the *Board of Scientific & Industrial Research* will be held in the South Block, Central Secretariat, New Delhi, on March 30, 1959 at 9.00 a.m.

A meeting of the *Governing Body* will be held in the South Block, Central Secretariat, New Delhi, on March 31, 1959 at 9.00 a.m. This will be followed by the Annual General meeting of the *Society.*

Upholstery Leather Manufacture— Demonstration at Calcutta

The *Central Leather Research Institute,* Madras has arranged the practical demonstration of the process for the manufacture of upholstery leather by semi-alum tannage from bark tanned hides at Calcutta as part of their Extension Service Programme. The demonstration which has been arranged in collaboration with Small Industries Service Institute, Calcutta, will commence on March 16, 1959.

Personal

* Shri B. M. Bishui has been appointed, on promotion, Senior Scientific Officer: Grade I, CGCRI, Calcutta, with effect from Nov. 24, 1958.

* Shri M. C. Caprihan has been appointed, on promotion, Senior Scientific Officer: Grade I, CGCRI, Calcutta, with effect from Nov. 24, 1958.

* Dr. S. Sen has been appointed, on promotion, Senior Scientific Officer: Grade I, CGCRI, Calcutta, with effect from Nov. 24, 1958.

* Dr. R. N. Mukherjee has been appointed Plant Engineer (Senior Scientific Officer: Grade II), CFRI, Jealgora, with effect from Feb. 5, 1959.

* Dr. E. C. Mathew has been appointed, on promotion, Senior Scientific Officer: Grade II, CLRI, Madras, with effect from Oct. 29, 1958.

* Shri V. Thiagarajan has been appointed Accounts Officer, CECRI, Karaikudi, with effect from Feb. 9, 1959 *vice* Shri H. G. Dhavalikar.

*Shri J. P. Singh, Section Officer: Grade II, on transfer from NPL, New Delhi, joined the CFRI, Jealgora, with effect from Feb. 2, 1959 *vice* Shri K. V. Karunakaran, transferred to CLRI, Madras.

* Dr. R. Bhaskaran has been appointed, on promotion, Junior Scientific Officer, CLRI, Madras, with effect from Oct. 23, 1958.

(*Contd. on p. 4, col. 1*)

CFRI, JEALGORA—Interior view of the Koppers-Totzek coal dust gasification pilot plant fabricated and put into operation

BRIEFS

Nature of Coal—CFRI Symposium

A symposium on the Nature of Coal was held at the *Central Fuel Research Institute*, Jealgora, from Feb. 7 to Feb. 9, 1959. The symposium was inaugurated by Prof. B. C. Guha, Head of the Department of Applied Chemistry, University of Calcutta. Prof. M. S. Thacker, Director-General, Scientific & Industrial Research, presided.

About 40 papers, received from scientists and technologists in India and abroad (U.S.S.R., U.K., Belgium, West Germany, Czechoslavakia, Canada, Australia, New Zealand, Japan and Yugoslavia), were presented and discussed in six technical sessions. The papers covered various aspects of coal structure including origin and systematics of coal, petrographic and X-ray studies of coal, physical and chemical methods of determining coal constitution and physico-chemical properties of coal.

In his inaugural speech, Prof. Guha observed that civilisation can lead us to greater heights if science is used with wisdom. He emphasised the necessity of close collaboration of universities with national laboratories for rapid scientific progress. He referred to the importance of coal as a starting material in the manufacture of dyes, drugs, plastics and explosives.

Prof. Thacker spoke of the useful work being done at the Institute and the wide interest it has stimulated in the country and abroad.

Dr. Lahiri, in the course of his welcome address, dwelt on the importance of fundamental research on structure of coal and the investigations pursued by the Central Fuel Research Institute on the subject.

Tanning as a Small Scale and Cottage Scale Industry—CLRI Symposium

The symposium on Tanning as a Small Scale and Cottage Scale Industry held at the *Central Leather Research Institute*, Madras, from Feb. 15 to Feb. 17 was inaugurated by Prof. M. S. Thacker, Director-General, Scientific and Industrial Research. Dr. A. Lakshmanaswamy Mudaliar, Vice-Chancellor, Madras University and Chairman, Executive Council, CLRI, presided. Over 200 delegates from India and abroad including scientists, technologists, and tanners participated in the deliberations.

Forty-eight papers dealing with different aspects of small scale and cottage scale tanning industry in India were presented and discussed during the course of 3 technical sessions. Some of these traced the history of the tanning industry at cottage level through the ages, and dealt with the problems in general facing the industry. Others pertained to: (1) Raw hides and skins— difficulties in collection, preservation and transport experienced by small scale tanner; (2) processes and treatment materials: traditional and modern processes—bag tanning of sole leather, village scale preparation of leather utilising *Jawasu* and *akhada* for unhairing, preparation of vegetable tanned *kattais,* indigenous method of vegetable tanning of sheep skins using flour for unhairing, preparation of *nari* leather, indigenous method of alum tannage of sheep skins for shuttle-cock leather, improvements in E. I. tanning; (3) marketing—difficulties experienced; and (4) by-products. In the concluding session (fourth session), a brief account of the papers read and the suggestions made by the delegates were presented.

Prof. Thacker, in his inaugural address, observed that tanning as cottage and large scale industry could co-exist in this country. He suggested the constitution of a Study Committee to examine the possibilities of planning cottage industry as an economic unit, utilising science and technology.

Shri C. Subramanian, who presided over the concluding session, commended the work being done by the Institute in the development of Indian tanning industry on scientific lines.

An exhibition displaying the raw materials, tanning auxiliaries used by village tanners, products of village and cottage scale tanners, and models showing tanning of leather on a small scale, was arranged at the Institute during Feb. 15-21, 1959.

Prof. Thacker Inaugurates the Indian Hides and Skins Improvement Society

The Indian Hides and Skins Improvement Society was inaugurated by Prof. M. S. Thacker, Director-General, Scientific and Industrial Research, at the Central Leather Research Institute, Madras, on Feb. 16, 1959. Shri K. Kamaraja Nadar, Chief Minister, Madras State, presided over the function.

The Memorandum and Rules & Regulations of the Society are available from Dr. S. K. Barat, Executive Secretary of the Society, Central Leather Research Institute, Madras.

CFRI Foundation Lecture

Recent progress in the chemistry of synthetic dyes was the subject of the Ninth Foundation Lecture of the Central Fuel Research Institute, Jealgora, delivered by Dr. K. Venkataraman, Director, NCL, Poona, on Feb. 17, 1959. Dr. Venkataraman referred to the widening field of dyestuff chemistry during the last 25 years, and observed that this phenomenal growth was all the more remarkable considering the fact that for every commercially successful dye, there were hundreds which failed at the laboratory stage. He made special mention of some of the important classes of dyes developed in the last decade including fluorescent brightening agents (which are now added to many washing soaps to give added whiteness to the washed material) and dyes which act as ultraviolet light absorbers.

Conquest of Usar

The results of successful experiments carried out by the *National Botanic Gardens*, Lucknow, on the reclamation of alkaline land at Banthra (Lucknow Dt.) have been published in the form of a booklet entitled, 'Conquest of Usar' The booklet records the various operations necessary for reconditioning of *usar* land, and labour charges and materials required.

The 14-page booklet includes 7 illustrations showing the Banthra nursury and farm and the paddy and *bajra* fields grown on conditioned land.

RESEARCH IN PROGRESS

National Laboratories

Central Electrochemical Research Institute, Karaikudi

Production of Misch Metal — Electrolytic production of misch metal—a mixture of cerium metals used for manufacture of ferrocerium, etc.—from hydrated cerium chloride obtained as a by-product from M/s Indian Rare Earths (Private) Ltd., Alwaye, has been investigated.

Ferrocerium alloy containing a high percentage of cerium is obtained by electrolysing a mixture of hydrated cerium chloride, ammonium chloride, sodium chloride and potassium chloride in mild steel container; however, when the mixture is electrolysed in graphite crucible, a small quantity of cerium metal is obtained.

Tolualdehydes from Xylenes—Conditions for a process for the oxidation of *ortho*—, *meta*— and *para*—xylenes and mixed xylenes to corresponding tolualdehydes utilising electrolytically prepared paste of manganic sulphate have been standardised. A process for the isolation of tolualdehydes has also been developed.

The oxidation of manganous sulphate to manganic sulphate, reacting the latter with xylenes and reuse of the manganous sulphate for re-oxidation is cyclic and hence be suitable for adoption for practical scale production of these important aldehydes.

Central Salt Research Institute, Bhavnagar

Minor Constituents of Sea Water—Systematic work on the minor constituents of Indian sea water is being carried out for the first time at the Institute. The presence of lithium, strontium, boron and rubidium has been shown in the sea water near Bhavnagar. The results are useful from the view point of chemical oceanography.

Central Electronics Engineering Research Institute, Pilani

Moving Coil Microphone —Moving coil microphone utilising indigenously available materials for all the components (except ceramic magnets) has been designed and assembled. The microphone compares favourably with good quality imported products. The frequency response of the microphone is flat within 4 db. from 55 c/s to 10,000 c/s. and the sensitivity 92 db. below 1 volt for sound pressure of one dyne per sq.cm. Several models of the microphone assembled at the Institute have been found satisfactory on testing. Work is in progress to develop tools and jigs for economic fabrication and assembly of microphones on a large scale.

Studies on the manufacture of ceramic magnets are underway at the National Physical Laboratory, New Delhi.

CECRI, KARAIKUDI—Dr. K. S. G. Doss, Director, explaining the fundamental work on surfactants in progress at the Institute to Shri Bishnuram Medhi, Governor of Madras during his recent visit

Sponsored Research

Degradation of Jute Fibre by Micro-organisms.—Studies on microscopic detection of damage to jute fibre by fungal and bacterial growth have led to the development of a staining technique for the detection of fungal growth, both on the surface and inside the lumen of the fibre. Chlorazol Sky Blue stains the hyphae blue, leaving the fibres colourless. For the detection of internal growth, the ultimate cells of the fibre are loosened to some extent by swelling with caustic soda before application of stain.

Using this technique, it has been found that lumen growth is not a universal feature but differs with fungal species as well as conditions of growth. Some fungi with strong jute-decomposing capacity apparently do not invade the lumen when grown on sterilized fibres in a nutrient salt medium. Burial in a soil rich in micro-organisms or exposure to rain and sun caused quick external and internal growth, whereas jute materials exposed at 100 per cent. R. H. or stored with excessive moisture showed relatively less internal growth.

For a study of structural changes in the fibre material, damaged fibres were treated with caustic soda and chromic acid; complete cracks across the cell-wall and corrosion of inner and outer cell-wall were observed—S. N. BASU & REKHA GHOSE, Indian Jute Mills Association Research Institute, Calcutta.

* * *

PROF. S. RANGASWAMY, Head of the Pharmacy Department, Andhra University, Waltair, will look after the scheme, *Studies on pigments of Indian Lichens*, *vice* Dr. S. S. Subrahmanyam, who has been appointed Reader in Chemistry, Medical College, Pondicherry.

PERSONAL

(*Contd. from p. 1, col. 3*)

* Dr. T. S. Ranganathan has been appointed, on promotion, Junior Scientific Officer, CLRI, Madras, with effect from Oct. 29, 1958.

* Dr. W. Madhavakrishna has been appointed, on promotion, Junior Scientific Officer, CLRI, Madras, with effect from Oct. 23, 1958.

* Shri J. C. Deb has been appointed, on promotion, Junior Scientific Officer, CLRI, Madras, with effect from Oct. 23, 1958.

*Shri B. C. Roy has been appointed Section Officer: Grade III, CGCRI, Calcutta, with effect from Jan. 7, 1959.

* Shri C. T. Thomas has been appointed Section Officer: Grade III, CECRI, Karaikudi, with effect from Feb. 9, 1959.

* * *

* Shri B. K. Agarwal, Junior Scientific Officer, CGCRI, Calcutta, left for U.K. on Jan. 1, 1959 for training in *Silicate analysis*, under Colombo Plan.

* Dr. C. K. Ramesh, Senior Scientific Officer, CBRI, Roorkee, resumed duty on Feb. 7, 1959, after completion of his studies at the University of Leeds, U.K. During his 2 years' stay abroad, he worked with Prof. R. H. Evans and got the Ph.D. degree for his thesis: *Secondary Factors Affecting the Ultimate Strength of Prestressed Concrete Beams.* He also visited various research institutions conducting researches on building materials and building engineering.

* * *

* Dr. Atma Ram, Director, CGCRI, Calcutta, has been nominated a member of the Commission on the *Chemistry of High Temperature* of the *International Union of Chemistry*.

* Shri Sushil Ghosh, Senior Scientific Assistant, CFRI, Jealgora, has been elected Associate Member of the *Institution of Engineers* (India).

* * *

* Shri Baleshwar Nath, Secretary, Central Board of Irrigation and Power, New Delhi, has been nominated a member of the *Civil Engineering & Hydraulics Research Committee* of the CSIR.

PATENTS & PROCESSES

Applications Filed

65611: *Improvements in or relating to standard filters used for calibrating spectrophotometer and other optical instruments*—I. Sanghi & N. V. Parthasarathy, CECRI, Karaikudi.

66148: *Improvements in or relating to semi-conductors and the preparation of rectifiers*—H. V. K. Udupa, CECRI, Karaikudi.

66175: *A process for the oxidation of* ortho, meta *and* para *xylenes and mixed xylenes to the corresponding tolualdehydes*—H. V. Udupa & M. S. Venkatachalapathi, CECRI, Karaikudi.

66194: *Improvements in or relating to can-sealing composition*—D. Raghunath & S. L. Kapur, NCL, Poona.

66195: *Preparation of lead dioxide electrodes for electrolysis*—H. V. K. Udupa & K. C. Narasimham, CECRI, Karaikudi.

66196: *A process for the isolation of new cardiac glycosides from the seeds of* Thevetia neriifolia *Juss*—S. Rangaswami & E. V. Rao, Andhra University, Waltair.

66197: *A new method for the oxidation of cumene to alpha-cumylhydroperoxide*—N. G. Basak, J. M. Sagar & A. Lahiri, CFRI, Jealgora.

66228: *Improvements in or relating to wheel mounting mechanisms*—C. R. Gupta & S. R. Mehra, NPL & CRRI, New Delhi.

66293: *A process for the production of anthraquinone*—C. S. B. Nair, A. N. Basu & A. Lahiri, CFRI, Jealgora.

Applications Accepted

59658: *An electric heater*—C. R. Gupta, NPL, New Delhi.

59835: *An improved process for the production of shrink and crease proof finishes on cellulose textiles*—N. B. Sattur, E. Syamalarao & V. B. Chipalkatti, Shri Ram Institute for Industrial Research, Delhi.

60333: *Improvements in or relating to the production of battery grade manganese dioxide from manganese ores*—V. Aravamuthan & T. R. Venkatasubramanian, CECRI, Karaikudi.

FORM IV

(*See Rule* 8)

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I, B.N. Sastri, hereby declare that the particulars given above are true to the best of my knowledge and belief.

Feb. 18, 1959

(*Sd*) B. N. SASTRI
Signature of Publisher

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Central Public Health Engineering Research Institute

A planning committee for the Central Public Health Engineering Research Institute, Nagpur (CPHE) with following has been constituted: Prof. M. S. Thacker, Director-General, Scientific & Industrial Research (*Chairman*); Shri N. V. Modak, Director, CPHE; Dr. V. Subrahmanyan, Director, CFTRI, Mysore; Dr. B. V. Bhoota, Dorr-Oliver (India) Ltd., Bombay; Shri P. C. Bose, Chief Public Health Engineer, West Bengal Government; a representative each of the ministries of Community Development and Health; Shri K. G. Krishnamurthi, Deputy Secretary, CSIR (*Members*); and Prof. M. V. Bopardikar, Asst. Director, CPHE (*Member-Secretary*).

Personal

*Dr. S. C. Jain has been appointed, on promotion, Senior Scientific Officer: Grade I, NPL, New Delhi, with effect from Feb. 19, 1959.

*Shri R. V. Singh has been appointed, on promotion, Senior Scientific Officer: Grade II, NPL, New Delhi, with effect from Feb. 19, 1959.

*Dr. M. S. Ramachandrachari has been appointed, on promotion, Senior Scientific Officer: Grade II, NPL, New Delhi, with effect from Feb. 19, 1959.

*Dr. M. R. Kundu has been appointed, on promotion, Senior Scientific Officer: Grade II, NPL, New Delhi, with effect from Feb. 19, 1959.

*Shri K. L. Handa has been appointed, on promotion, Senior Scientific Officer: Grade II, RRL, Jammu, with effect from Dec. 9, 1959.

*Dr. S. V. Venkateswaran has been appointed Senior Scientific Officer, CBRI, Roorkee, with effect from Jan. 2, 1959.

*Shri A. D. Khanna has been appointed Clerk-of-Works, CRRI, New Delhi, with effect from Dec. 6, 1958.

*Shri P. Janardanan has been appointed Clerk-of-Works, CMERI, Durgapur, with effect from Feb. 11, 1959.

*Shri Jogendrapal Singh, Section Officer: Grade III, NPL, New Delhi, has been appointed, on promotion, Section Officer: Grade II, CFRI, Jealgora.

*Shri R. C. Soni has been appointed, on promotion, Purchase Officer, NPL, New Delhi, with effect from Feb. 19, 1959.

*Shri Sadhu Singh has been appointed, on promotion, Section Officer: Grade III, NPL, New Delhi, with effect from Feb. 12, 1959.

* * *

*Dr. B. R. Nijhawan, Director, NML, Jamshedpur, has been elected President, *Institute of Indian Foundrymen* for the year 1959-60.

*Shri A. Rahman, Asst. Director, CBRI, Roorkee, has been elected member of the *Institution of Information Scientists, U.K.*

*Shri G. G. Sarkar, Senior Scientific Officer, CFRI, Jealgora, has been elected member of the *Mineralogical Society of America.*

*Shri K. L. Handa, Senior Scientific Officer, RRL, Jammu, has been elected Fellow of the *National Academy of Sciences of India.*

*Shri V. M. Bhuchar, Junior Scientific Officer, NPL, New Delhi, has been elected Associate of the *Royal Institute of Chemistry, London.*

*The following officers of the CFRI, Jealgora have been elected members of the *Coke Oven Managers' Association, U.K.*

Member: Drs. N. G. Basak & M. S. Iyengar and Shri A. K. Moitra.

Associate Member: Sarvashri K. Y. Shrikhande, H. C. Chakravarty, S. B. Das and D. Sen Gupta.

Graduate Member: Sarvashri B. N. Bose, K. Mazumdar and J. M. Sanyal.

*Dr. I. C. Chopra, Officer-in-charge, RRL, Jammu has been nominated a member of the India Pharmacopoeia "Indian Medicinal Plants Sub-Committee" of the Directorate of Health Services, Union Ministry of Health.

*The following officers have been nominated members of Committees/Panels of the *Indian Standards Institution*:

Shri S. Krishnan, Senior Scientific Officer, NPL, New Delhi—*Bicycles* Sectional Committee.

Shri R. K. Tandon, Senior Scientific Officer, NPL, New Delhi—*Electric Lamps* Sub-Committee.

Shri M. V. Joshi, Senior Scientific Officer, NPL, New Delhi—*Transformers and Chokes* Sub-Committee (Convener).

Shri T. V. Ramamurti, Senior Scientific Officer, NPL, New Delhi—*Power Frequency and Voltages* Sub-Committee.

Shri P. P. Bhatnagar, Asst. Director, NML, Jamshedpur—*Steel Wire Ropes* Sub-Committee.

Shri B. N. Das, Asst. Director, NML, Jamshedpur—*Sewing Machine* Sectional Committee.

Shri S. S. Bhatnagar, Senior Scientific Officer, NML, Jamshedpur—*Utensils* Sectional Committee.

Shri H. V. Bhaskar Rao, Senior Scientific Officer, NML, Jamshedpur — *Refractories Investigations* Sub-Committee.

Shri Jatinder Mohan, Senior Scientific Officer, NML, Jamshedpur — *Coke for Cupola* Sub-Committee.

Shri S. K. Chopra, Senior Scientific Officer, CBRI, Roorkee — Sub-Committee for the use of *Building Lime.*

Shri M. H. Pandya, Architect, CBRI, Roorkee — *Library Buildings, Fittings and Furniture* Sectional Committee.

BRIEFS

Recent Developments in Foundry Technology—NML Symposium Proceedings Published

The proceedings of the symposium on Recent Developments in Foundry Technology held in February 1958 at the *National Metallurgical Laboratory*, Jamshedpur, in collaboration with the Institute of Indian Foundrymen have been published in the *Indian Construction News*.

The publication (price, Rs. 25) gives a comprehensive review of recent developments in foundry technology and includes 46 research papers presented by foundrymen, technologists, scientists and research workers and discussed in the symposium. The papers cover a wide range of subjects, such as foundry raw materials — sands, coke, pig iron—including binding materials and the mechanism of binding; castings of S.G., ductile and nodular irons; refractories in foundry; oxy-acetylene processes in foundry; modernisation of foundry; wear resistance of piston rings and high temperature testing of sand risering of metal. Other papers included in the publication review the subjects of steel works, moulds, their lay-out and production technique in India; work study in foundry; Japanese and Australian foundry industries; and the heavy steel castings in U.K. The CO_2 process for cores and moulds has been amply discussed, particularly in the context of developments in countries such as U.K., Japan Australia and South Africa.

Power Generation in India

Dr. A. Lahiri, Director and Shri A. Ghosal, Statistical Officer, Central Fuel Research Institute, Jealgora, have made a critical study of the requirement and resources for power generation in India. The results of the study have been published in a supplement to the *Eastern Economist* (Vol. 4, No. 6, Feb. 6, 1959) under the title "Power Generation in India".

The 16-page supplement is divided into two parts; Part I: *Assessment* and Part II: *Reserves of Coal*. In Part I, an attempt has been made to assess (1) the requirements of electricity in future in relation to the total energy requirement and (2) the availability of resources for achieving the targets. Part II reviews the present position in regard to the high and low-grade coal reserves in India and explores the possibility of utilising inferior grade coals for power generation by the application of new scientific developments. Investigations carried out by the Central Fuel Research Institute in this respect are described.

The supplement aims at creating a greater awareness for the planning of power generation in India and stresses the need for perspective planning for rational and efficient utilisation of fuel resources.

IGY National Committee

The Indian National Committee for the IGY have issued News-Letter Nos. 16 & 17.

News-letter No. 16 (Jan. 24, 1959) lists the papers from Indian scientists participating in IGY included in the Supplement to the Commemoration Volume of the Journal of Scientific & Industrial Research [17A(12), 1958] issued on the Sixtieth Birthday of Dr. K. S. Krishnan, Director, NPL, New Delhi.

News-letter No. 17 (Jan. 25, 1959) announces the preparation of a packet of educational material — Planet Earth—by the U.S. National Committee for the IGY to stimulate the interest of young people in Geophysics and to aid teachers in presenting information on the earth sciences to students. Copies of the packets can be obtained from the Publications Office of the National Academy of Sciences, U.S.A.

Research Fellowships

The following have been awarded *CSIR Fellowships* for research in schemes noted against their names:

Senior Fellowship:

1. Shri T. Guha — *Liquid crystalline detergent systems* (Indian Association for the Cultivation of Science, Calcutta).

2. Kumari Maharani Chakraborty — *Microbial synthesis of proteins in relation to the biogenesis of nucleic acid* (Bose Institute, Calcutta)

3. Shri M. K. Gokhale — *Studies on the chlorine retention of resin treated cellulosic fibres* (Ahmedabad Textile Industry's Research Association, Ahmedabad).

4. Shri D. Ramachandra Raju — *Test requirements for cable impregnating for microbe aggression and temperature effect* (Indian Institute of Science, Bangalore).

5. Shri P. S. Rao — *Geotechnical properties of black cotton soils* (Indian Institute of Technology, Kharagpur).

6. Shri G. K. Ambady — *Study of the structure of absorbed materials on textile fibres by small angle X-ray scattering* (Ahmedabad Textile Industry's Research Association, Ahmedabad).

7. Shri Ehsanullah Khan — *Explorations for the remains of early man* (Panjab University, Chandigarh).

Junior Fellowship:

1. Shri Samarendra Mukherjee— *Total synthesis of aldosterone and conessine* (Presidency College, Calcutta).

2 & 3. Sarvashri Baldev Vig & Mohan Singh — *Studies in terpenes & terpenoids* (Panjab University, Chandigarh).

Research Schemes Completed

The following research schemes have been terminated, on completion of work, with effect from Feb. 28, 1959.

1. *Production of riboflavin by a mutant yeast and to assess the commercial feasibility of the process* — Dr. K. Mitra, Jadavpur University, Calcutta.

2. *New synthesis of folic acid derivatives* — Dr. J. N. Ray, Institute of Science, Bombay.

3. *Effect of cladding walls in redistribution of stresses in the design of multistorey rigid framed buildings* — Dr. S. K. Mukherjee, Bengal Engineering College, Howrah.

4. *Inorganic polymerisation reactions* — Dr. A. K. Dey, University of Allahabad, Allahabad.

5. *Fractionation of fatty materials by clatherate compounds*—Dr. T. N. Mehta, Nagpur University, Nagpur.

6. *Mercaptans as modifiers in emulsion polymerisation*—Dr. M. N. Dass, Jadavpur University, Calcutta.

7. *Studies in sulphate complexes in solution between the transitional divalent, etc.* — Dr. A. B. Sen, University of Lucknow, Lucknow.

RESEARCH IN PROGRESS

National Laboratories

National Physical Laboratory, New Delhi

Colorimetric Estimation of Chromium — Two colorimetric methods for the estimation of chromium in solution have been developed. The methods are based on the formation of complexones.

In the first method, the formation of a complex with thioglycollic acid is made use of. Thioglycollic acid reduces dichromate ions instantaneously to trivalent chromium. The complex formed is green in colour at *p*H 6-9 and the intensity of the colour is proportional to concentration of chromium ions. The method is useful for estimation of trivalent and hexavalent chromium in the presence of manganese.

The second method is based on the formation of a complex with chenta acid. The complex forms a violet coloured solution at *p*H 2-5.5; the intensity of the colour is proportional to concentration of chromium ions. The method can be used for the estimation of trivalent chromium in presence of hexavalent chromium.

Central Drug Research Institute, Lucknow

Cadmium Chloride as Oral Contraceptive — The use of cadmium chloride as an oral contraceptive has been studied on young rats as experimental animals. After 48 hr. of administration, mature as well as immature follicles are destroyed; haemorrhage, aberrent luteinization and atrophy of the stromal elements are consistently observed. However, primordial oocytes, germinal epithelium and stromal tissue in the periphery of the organ seem to resist the action of the metal. These effects become acute and reversible after 96 hr. Young healthy follicles, presumably differentiated from the surviving oocytes, are encountered. The haemorrhage and luteinization also disappear. After 168 hr., the ovary becomes normal. There is no effect on the uterus and the pattern of cholesterol metabolism in ovary, particularly during the recovery stage, indicating thereby that the endocrine potentialities of the ovary are uninterrupted by cadmium chloride. No other side effects of the metal are noticed — A. B. Kar.

Yeast Hydrolysate from Distillery Sludge — A palatable yeast hydrolysate powder, rich in amino acids and vitamins of the B-complex group, has been prepared from distillery sludge—a waste product of the alcohol industry. The method of preparation essentially consists of washing the sludge, autoclaving and digesting the cells with suitable enzymes, clarifying by super-centrifugation and drying the product. The product contains almost all the amino acids (excepting sulphur containing amino acids) including 8 essential amino acids as shown by chromatographic studies. The analysis for vitamins showed the presence of riboflavin, niacin and thiamine. Attempts are being made to fortify the product and also to increase its palatability. The product has been found to be comparable to the Difco peptone for the growth of bacteria — S. C. Agarwala & M. K. Rastogi.

Central Electrochemical Research Institute, Karaikudi

Primary Wet Cell — A new primary wet cell using cheap and indigenous components has been developed at the Institute and patented. This can be used as a substitute for Leclanche cell widely used in the Railways and Postal Departments for telegraphy, telephony, block and signal systems, etc. The salient features of the new cell are: (1) Common salt is used as electrolyte and cheap commercial ferric chloride solution as depolariser in place of the costlier ammonium chloride as electrolyte and manganese dioxide as depolariser in the Leclanche cell; (2) a central carbon rod in the new cell is a permanent component of the cell unlike in Leclanche cell where the entire depolarising unit (consisting of a mixture of manganese dioxide and carbon packed around central carbon rod) has to be replaced when the cell is exhausted; (3) unlike Leclanche cell, it is capable of giving continuous current drains and does not require frequent cleaning of zinc rod.

Field trials carried out by the Railways and Postal Departments on a dozen cells have shown encouraging results.

The new cell is also a good substitute for costly air-depolarised or copper oxide primary wet cells.

Sponsored Research

Building Stones of Rajasthan — Studies have been carried out on the building stones of Rajasthan in order to collect data on their strength and other physical properties which are not available. The compression, flexure, tension and shear strength and physical properties (durability, porosity, absorption, specific gravity, etc.) of the stones have been evaluated. Also, laboratory tests on Jodhpur sand stones of white and pink variety have indicated that the stones have compression and bending strength of 9,500 psi and 2,100 psi respectively and are suitable for use as columns, lintels, roof slabs, etc., besides masonry work. The red sand stone is soft and excellent for ornamental carving work.

The data are being compiled in the form of reference tables and are expected to be helpful in the designing of stone buildings in the State — P. Pratapa Mowli & M. L. Mathur, M. B. M. Engineering College, Jodhpur.

Research Papers

Suction and power requirements of a ventilated wall 'half-nozzle' at transonic speeds—D. M. Rao & S. M. Ramchandra, Indian Institute of Science, Bangalore. *J. aero. Soc. India*, **10**(4), (1958), 63-69.

Chemical composition of *Pogostemon plectranthoides* oil (a short note)—S. S. Chaudhary, Gurmit Singh & K. L. Handa, RRL, Jammu. *Indian J. Pharm.*, **21** (1959), 38-39.

Chemical composition of *Ferula jaeschkeana* oil (a short note)—S. S. Chaudhary & K. L. Handa, RRL, Jammu. *Indian J. Pharm.*, **21** (1959), 39-40.

An infra-red study of *n*-alkyl malonic acids and their diethyl esters—K. Nagaraja Rao & A. B. Biswas, NCL, Poona. *Spectrochim. Acta*, **13** (1958), 151-53.

PATENTS & PROCESSES

Applications Filed

INDIA

66294: *Improvements in or relating to electrode holders for manual arc welding*—G. S. Chowdhury, G. C. G. Reddy, M. K. Chary & S. H. Zaheer, RRL, Hyderabad.

66295: *Improvements in or relating to circuit techniques using valves and transistors as a linear circuit element*—M. V. Joshi & T. V. Ramamurti, NPL, New Delhi.

66296: *Improvements in and relating to stabilisation of bandpass characteristics of transistor high frequency amplifier*—M. V. Joshi & T. V. Ramamurti, NPL, New Delhi.

66297: *Improvements in or relating to circuit techniques using valves and transistors as linear and non-linear circuit element*—M. V. Joshi & T. V. Ramamurti, NPL, New Delhi.

66298: *A new process for the manufacture of latex-cement for leather*—G. S. Rama Iyer & Y. Nayudamma, CLRI, Madras.

U.S.A.

779547: *Improvements in or relating to the refining and the utilisation of cottonseed products*—T. R. Seshadri & K. Chander, University of Delhi, Delhi.

Applications Accepted

INDIA

60556: *A new method for the manufacture of spherical crystals of alkali halides*—G. I. Finch, B. K. Shukla & D. J. Mehta, CSRI, Bhavnagar.

61981: *A process for the stabilisation of dolomite and a method of making refractory bricks from stabilised dolomite*—M. R. Rao, P. C. Sen & H. V. B. Rao, NML, Jamshedpur.

62939: *Improvements in or relating to curing catalyst for the treatment of textiles materials with aminoplast resins*—V. B. Chipalkatti, K. V. Ramalingam & N. B. Sattur, Shri Ram Institute for Industrial Research, Delhi.

64226: *Preparation of predigested protein rich pasty products for fortifying and seasoning food preparations*—V. Subrahmanyan, B. S. Lulla & D. S. Johar, CFTRI, Mysore.

PAKISTAN

935/58: *Improvements in or relating to the refining and the utilisation of cottonseed products*—T. R. Seshadri & K. Chander, University of Delhi, Delhi.

Applications Sealed

INDIA

58902: *A process for the preparation of 9 : 10 thiopegan derivatives containing phenolic hydroxy groups*—K. S. Narang, H. S. Sachdev & K. S. Dhami, Panjab University, Hoshiarpur.

58903: *Preparation of 2-hydroxy and 2-chlorothiazoles containing phenolic residues in position 4*—K. S. Narang, H. S. Sachdev & K. S. Dhami, Panjab University, Hoshiarpur.

59419: *A process for the preparation of tridecane—1:13—dicarboxylic acid or its ester, suitable for the preparation of exaltone (cyclopentadecanone)*—B. B. Ghatgey, U. G. Nayak, K. K. Chakravarti & S. C. Bhattacharyya, NCL, Poona.

59497: *Production of porous polymer suitable for preparing cation-exchange resins*—K. P. Govindan, R. N. Pandya & N. Krishnaswamy, NCL, Poona.

59606: *Preparation of cation-exchange resin from porous cashew nut shell liquid polymer*—N. Krishnaswamy, R. N. Pandya & K. P. Govindan, NCL, Poona.

59853: *Improvements in or relating to the preparation of costus root oil and the isolation of lactonic constituents therefrom*—G. R. Kelkar & S. C. Bhattacharyya, NCL, Poona.

60866: *A process for the preparation of an adsorbent clay from alluvial soils like* chikni mitti *for the recovery of vitamin B_2 (riboflavin) from natural sources or fermented products*—S. C. Agarwala & T. Sen, CDRI, Lucknow.

60867: *Processing of banana pseudostem for use as cushioning material*—N. V. R. Iyengar, B. Anandaswamy & H. B. N. Murthy, CFTRI, Mysore.

Vacuum Tester for Canned Foods

The *Central Food Technological Research Institute*, Mysore has developed (Indian Pat. No. 63659) an improved vacuum tester which can accurately measure the internal vacuum of sealed cans without puncturing them.

The tester can be worked both on the mains and storage batteries, whereas the imported instruments can be worked only on the batteries. Other special features of the tester are: (1) it is easy and simple to operate, each test being complete in less than a minute; (2) hydrogen swells and CO_2 swells can be detected during the initial stages of formation suggesting an early disposal or consumption of the canned material; (3) Cans of 2-6 in. diameter can be tested; and (4) it is compact and portable, the only auxiliary equipment needed being a source of vacuum, which can be a vacuum line in the factory, a suction pump attached to a water tap or a small vacuum pump.

Parties desirous of undertaking the manufacture of the instrument may contact the Secretary, National Research Development Corporation, Mandi House, New Delhi.

Can-Sealing Composition

The lining compositions used for sealing of metal cans are at present imported to meet the growing requirements of the can manufacturing industry.

The *National Chemical Laboratory*, Poona has developed a composition which is essentially based on raw materials easily available in India. The composition can be stored for long periods under different conditions and is not attacked by edible oils and syrups and can be used on conventional high speed automatic can-sealing machine.

Stainless steel ball mills, mixers and strainers are the main equipment required for its manufacture.

Parties interested in the commercial development of the process may write to the Secretary, National Research Development Corporation, Mandi House, New Delhi.

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CSIR NEWS

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LIBRARY

GOVERNING BODY DECISIONS

The Board of Scientific and Industrial Research and the Governing Body of the Council of Scientific & Industrial Research met in New Delhi on March 30 and March 31, 1959 respectively. The Prime Minister, Shri Jawaharlal Nehru presided.

New Research Stations

The Governing Body approved of the setting up of a Sub-station of the National Botanic Gardens, Lucknow, at Verinag (Kashmir) for undertaking investigation on the behaviour of plants in dry and temperate climates.

The donation of Rs. 20 lakhs by the Maneckji Cooper Education Trust for establishing an Industrial-*cum*-Science Museum at Bombay was accepted.

Research Projects and Schemes

The Governing Body decided to sponsor research on earthquake engineering at the Roorkee University. Nine projects bearing on the development of vegetable oils during the Second-Five-Year Plan were approved. The projects, sponsored jointly with the Indian Central Oilseeds Committee, include the following subjects: Oilseeds milling, non-edible oils, cottonseed oil, castor oil, fatty acids, solvent extraction, activated earths and carbons, surface active agents and surface protective coatings.

A project for undertaking a Steel Demand Appraisal Study by the National Council of Applied Economic Research was sanctioned.

The setting up of a pilot plant on *Synthesis of pyridoxine hydrochloride (Vitamin* B_6) at the National Chemical Laboratory, Poona was approved.

Symposia

The holding of symposia on the following subjects during the year 1959-60 was approved.

1. *Industrial catalysis in coal and petroleum and modern developments in the processing of coal tar*—Central Fuel Research Institute, Jealgora.
2. *Shell structures*—Central Building Research Institute, Roorkee.
3. *Utilisation of by-products of the leather industry*—Central Leather Research Institute, Madras.
4. *Minor constitutents in glass*—Central Glass & Ceramic Research Institute, Calcutta.
5. *Amoebiasis in India and its therapy*—Central Drug Research Institute, Lucknow.

Besides the above, the holding of two symposia at the Central Public Health Engineering Research Institute, Nagpur were approved.

The Governing Body approved the reconstitution of Research Committees with effect from April 1, 1959.

PERSONAL

*The following Officers of the RRL, Hyderabad, have been appointed, on promotion, Senior Scientific Officers: Grade I with effect from the dates given against their names.

Dr. Y. Venkatesham (Dec. 20, 1958)

Dr. M.B. Naidu (Jan. 2, 1959)

Shri K.G. Rangrez (Jan. 2, 1959)

Shri M.A. Sivasamban (Jan. 2, 1959)

Dr. B.S.R. Sastry (Jan. 2, 1959)

*The following Officers of the CFRI, Jealgora, have been appointed, on promotion, Senior Scientific Officers: Grade I with effect from March 10, 1959.

Shri P.N. Mukherjee

Shri B.K. Majumdar

Shri Sunil K. Majumdar

Bhatnagar Memorial Award for Dr. Krishnan

Dr. K. S. Krishnan, F. R. S., Director, NPL, New Delhi, has been awarded the Shanti Swarup Bhatnagar Memorial Award for the year 1958. The award, instituted by the council recently, is for outstanding contribution in scientific research. Dr. Krishnan is the first recipient of the award.

* * *

*Dr. M.L. Khanna has been appointed, on promotion, Senior Scientific Officer: Grade I, NPL, New Delhi, with effect from Feb. 28, 1959.

*The following Officers of the CFRI, Jealgora, have been appointed, on promotion, Senior Scientific Officers: Grade II, with effect from the dates noted against their names.

Dr. S.R. Srinivasan (Dec. 15, 1958)

Dr. N.R. Subbaratnam (March 10, 1959)

Shri S. Gopal Rao (March 10, 1959)

Shri A.K. Chakravarty (March 10, 1959)

Shri S.K. Sen Gupta (March 10, 1959)

*Shri D.P. Agrawal has been appointed, on promotion, Senior Scientific Officer: Grade II, RRL, Hyderabad, with effect from Dec. 18, 1958.

*Shri S. Parthasarthy has been appointed, on promotion, to officiate as Head, Insdoc, NPL, New Delhi, with effect from March 13, 1959 *vice* Dr. P. Sheel who is on deputation to the International Atomic Agency.

(*Contd. on p. 4, col. 1*)

CSIR RESEARCH COMMITTEES RECONSTITUTED

On the recommendation of its Advisory Board, the Governing Body of the Council have approved the reconstitution of the research committees with effect from April 1, 1959. The reconstituted research committees and their personnel are given below :

Aeronautical Research Committee—Dr. D.S. Kothari (*Chairman*) ; Dr. P. Nilakantan ; Dr. S. Dhawan ; Shri K.L. Puri ; Dr. V.M. Ghatage ; Shri V. Cadambe ; Shri T.D. Kumar; Professor of Aeronautical Engineering, M.I.T., Madras ; Managing Director, Hindustan Aircraft (Private) Ltd., Bangalore ; Chief Engineer, Mysore State Electricity Board ; a representative of I.A.F. ; and Director-General, Scientific & Industrial Research (*Members*).

Biological Research Committee—Prof. P. Maheshwari (*Chairman*) ; Dr. Baini Prashad ; Dr. B.R. Seshachar ; Dr. V.R. Khanolkar ; Dr. K.A. Chowdhury ; Rev. Fr. H. Santapau ; Prof. S. Mookerjee ; Dr. J.C. Sen Gupta ; Dr. M.L. Roonwal ; Dr. B.P. Pal ; Dr. T.S. Sadasivan ; Prof. K.N. Kaul ; Dr. K.P. Basu ; Dr. H.D. Srivastava ; Dr. M.S. Randhawa ; and Director-General, Scientific & Industrial Research (*Members*).

Chemical Research Committee—Dr. B.C. Guha (*Chairman*) ; Dr. K. Venkataraman ; Dr. M. Narasingha Rao ; Dr. R.V. Bhatt ; Dr. B.N. Ghosh ; Dr. Santi R. Palit ; Dr. D.K. Banerjee ; Prof. T.R. Seshadri ; Dr. P.S. Sarma ; Dr. V. Subrahmanyan ; Dr. N.R. Kuloor ; Dr. A.N. Ghosh ; Dr. H.E. Eduljee ; Dr. N.R. Kamath ; Dr. T.S. Subramanian ; Dr. V.B. Chipalkatti ; and Director-General, Scientific & Industrial Research (*Members*).

Civil Engineering & Hydraulic Research Committee—Shri A.N. Khosla (*Chairman*) ; Director, CBRI, Roorkee ; Director, CRRI, New Delhi ; Director, National Buildings Organization, New Delhi ; Director, Indian Standards Institution, New Delhi ; Shri S.L. Kumar ; Shri K.F. Antia ; Prof. N.S. Govinda Rao ; Prof. B.R. Seth ; Shri H.P. Sinha; Secretary, Central Board of Irrigation and Power, New Delhi ; Shri N.N. Mazumdar ; Dr. Jaikrishnan ; Shri Hiranandani ; Shri R.K.V. Narasimhan ; and Director-General, Scientific & Industrial Research (*Members*).

Electrical & Mechanical Engineering Research Committee—Prof. M.S. Thacker (*Chairman*); Shri M. Hayath; Shri G.R. Damodaran ; Shri J.V. Joshi ; Shri B. Sen Gupta ; Shri C.S. Ghosh ; Shri V. Cadambe ; Dr. P. Nilakantan ; Prof. A. Ramchandran ; Maj. Gen. B.D. Kapur ; The Head of the Department of Power Engineering, Indian Institute of Science, Bangalore ; The Director (Standardisation), Mechanical Research, Design and Standardisation Organisation, Chittaranjan ; Dr. B.D. Kalelkar ; and Prof. B.M. Belgaumkar (*Members*).

Essential Oils Research Committee—Shri P.A. Narielwala (*Chairman*) ; Shri A.K. Menon ; Dr. K.C. Gulati ; Director, Indian Standards Institution, New Delhi ; Director, NCL, Poona ; Dr. Sadgopal ; Dr. M.N. Ramaswamy ; Dr. D.K. Banerjee ; President, Forest Research Institute and Colleges, Dehra Dun ; Dr. A.Y. Swami ; Dr. I.C. Chopra ; Prof. K.N. Kaul ; Shri Y. Gutsatz ; Shri S.L. Mehra ; Shri R.K. Malik ; and Director-General, Scientific & Industrial Research (*Members*).

Geological and Mineralogical Research Committee—Dr. D. N. Wadia (*Chairman*) ; Director, Geological Survey of India, Calcutta ; Dr. W. D. West ; Dr. C. Mahadevan ; Dr. Rajnath ; Dr. P.K. Ghosh ; Dr. M.S. Krishnan ; Dr. R.S. Krishnan ; Dr. S.R. Narayanan Rao ; Shri N. N. Chatterji ; Dr. M.R. Sahni ; Director, Indian Bureau of Mines ; Dr. J. W. Whitaker ; and Director-General, Scientific & Industrial Research (*Members*).

Metals Research Committee—Shri J. J. Ghandy (*Chairman*) ; Shri J.S. Vatchagandhy ; Director, Geological Survey of India, Calcutta ; Director, NML, Jamshedpur ; Dr. G.P. Chatterjee ; Prof. Brahm Prakash ; Shri R.G. Bhatawadekar ; Shri J.G. Berry ; Shri T.V. Joseph ; Director, CECRI, Karaikudi ; Director of Inspection (Metallurgical) Tatanagar ; Dr. B.D. Kalelkar; a representative of the Indian Iron and Steel Co. ; and Director-General, Scientific & Industrial Research (*Members*).

Pharmaceuticals and Drugs Research Committee—Dr. K. A. Hamied (*Chairman*) ; Maj. Gen. S. S. Sokhey ; Dr. C. G. Pandit ; Dr. U.K. Seth; Prof. S. Rangaswami; Dr. I. C. Chopra; Director, Malaria Institute of India, Delhi ; Shri S.K. Borkar ; Dr. U. P. Basu ; Dr. B. Mukerji ; Dr. K. Biswas; Prof. B.D. Tilak ; Prof. G.K. Karandikar; Maj. Gen. S.L. Bhatia ; Dr. D. L. Shrivastava ; Director-General, Scientific & Industrial Research (*Members*) ; and Shri P. M. Nabar (*Secretary*).

Physical Research Committee—Dr. Vikram A. Sarabhai (*Chairman*); Dr. D. S. Kothari ; Director-General of Observatories, New Delhi ; Director, NPL, New Delhi ; Dr. M.W. Chiplonkar ; Dr. B.D. Nag Chowdhury ; Dr. K. Banerji ; Dr. P. Venkateswarlu ; Dr. S.K. Chakravarty ; Dr. M.G.K. Menon ; Dr. S. Bhagawantam ; Dr. P. S. Gill ; Dr. G. N. Ramachandran ; Dr. N.L. Singh ; Dr. A.K. Saha; Prof. R.C. Majumdar; and Director-General, Scientific & Industrial Research (*Members*).

Public Health Engineering Research Committee—Shri N. V. Modak (*Chairman*) ; Shri K. S. Krishnaswamy ; Chief Public Health Engineer, Bengal ; Chief Public Health Engineer, Andhra Pradesh ; Chief Public Health Engineer, Bombay ; Chief Public Health Engineer, U. P ; Dr. B. V. Bhoota ; Prof. N. Mazumdar ; Professor of Public Health Engineering, All India Institute of Hygiene and Public Health, Calcutta ; Shri Mahabir Parshad ; Dr. V. Subrahmanyan ; Prof. S. J. Arceivala ; and Director-General, Scientific & Industrial Research (*Members*).

Radio Research Committee—Dr. K. S. Krishnan (*Chairman*) ; Prof. K. Sreenivasan ; Prof. S. K. Mitra ; Dr. K.R. Ramanathan; Dr. J. N. Bhar ; Shri A.C. Ramchandani ; Dr. M. B. Sarwate ; Dr. J. S. Chatterjee ; Prof. S. V. Chandrasekhar Aiya ; Prof. S.P. Chakravarti ; Dr. A. S. Rao ; Dr. B. N. Singh ; The Chairman, (Joint Communications) Electronics Committee, Cabinet Secretariat, New Delhi ; a representative of Bharat Electronics Ltd. ; Director, CEERI, Pilani ; a representative of Radio Manufacturers' Association ; Director, Indian Standards Institution, New Delhi ; and Director-General, Scientific & Industrial Research (*Members*).

(Contd. on p. 4, col. 1)

RESEARCH IN PROGRESS

National Laboratories

Central Glass & Ceramic Research Institute, Calcutta

Peeling of Glaze—A glaze which has good gloss after firing even in a reducing atmosphere has been developed as a result of the study of the cause of peeling of sanitaryware glaze. The glaze satisfactorily resists the combined effect of increased salinity of water and excessive humidity which are generally met with during monsoons in coastal areas.

Central Food Technological Research Institute, Mysore

Simplified Method of Making Idli—Laboratory studies on *Idli* fermentation have resulted in the development of a simplified method for making *Idli* without having recourse to wet grinding. In the new method, finely ground black-gram flour is made into a paste with water, allowed to ferment for 6-8 hr., mixed with parboiled rice semolina and the batter is allowed to ferment for another 12 hr. after addition of more water. The batter gives soft and spongy *Idlis* with required acidity.

A composite *Idli* flour containing all the fermenting materials has also been developed. Good quality *Idlis* are prepared from the flour after allowing the batter to ferment for about 18-20 hr.

Cheese from Groundnut — A process for the production of hard type vegetable cheese from groundnut has been developed and is under standardisation. The product purely from vegetable sources, can replace milk cheese.

Supplementary Value of Multipurpose Food—Experiments on rats have shown that *Idli* fortified with Indian Multipurpose Food (IMF) as supplement promotes significantly higher growth of rats as compared with *Idli* containing black gram or a mixture of black gram and Bengal gram.

National Botanic Gardens, Lucknow

Reclamation of Alkaline Soils—Experiments carried out at the Banthra Nursery have shown that dried Mexican poppy (*Argemone mexicana)* when used as manure reduces the alkalinity of *usar* (alkaline) lands. The dried plant material has much higher nitrogen content than dung.

The Mexican poppy is a common weed with yellow or white flowers and prickly leaves and grows on waste lands throughout the country.

Sponsored Research

Shear Strength of Soils—Influence of rate of strain on the shearing characteristics of sands has been studied. The sand samples were tested at a fixed void ratio under normal stresses from 0 to 75 lb./sq. in. and the rate of strain in the range of 0.24 to 1.93 per cent per minute.

The results of the study have shown that (1) the effect of rate of strain on the angle of internal friction is insignificant; (2) the secant modulus of rigidity at failure increases with the applied normal stress; and and (3) the tangent modulus of rigidity at 40 per cent strength (assuming a factor of safety of 2.5) increases with the applied normal stress as well as with the rate of strain.

The ultimate shearing strength of sand samples calculated from the peak shearing strength and rate of volume increase agreed with the actual experimental values within reasonable error—Shamsher Prakash & S. Venkatesan, University of Roorkee, Roorkee.

RESEARCH PAPERS

Grain size specification and Steel selection—A.B. Chatterjea, NML, Jamshedpur.. *East. Met. Rev.*, **12** (1959), 89-96.

Porous metal self-lubricating bearings—S. Ranganathan, NML, Jamshedpur. *East. Met. Rev.*, **12** (1959), 109-16.

Polarographic reduction of hexavalent uranium in sodium tripolyphosphate : I—general studies —P.R. Subbaraman, N.R. Joshi & J. Gupta, NCL, Poona. *Analyt. Chim. acta*, **20** (1) (1959).

Crystallization of Indian beef tallow fatty acids from aqueous ethanols—V. V. R. Subrahmanyam & K. T. Achaya, RRL, Hyderabad. *J. Amer. Oil Chem. Soc.*, **35** (1958), 467-69.

Uber tropische pflanzen and tierfette—S. H. Zaheer & K. T. Achaya, RRL, Hyderabad. *Die Nahrung*, **2** (7) (1958).

Application of the 'quasi-crystalline model' for predicting the vapour-liquid equilibrium of some binary mixtures by using their boiling points—P.K. Katti & M.M. Chaudhri, Delhi University, Delhi. *Proc. Nat. Inst. Sci. India*, **24**, (1958), 330-38.

Dimension of side chains in coal structure—B.K. Mazumdar & A. Lahiri, CFRI, Jealgora. *Fuel*, **37** (1958), 495-98.

Disposition of hydrogen in coal structure—S.K. Chakrabartty, B.K. Mazumdar & A. Lahiri, CFRI, Jealgora. *Fuel*, **37** (1958), 498-501.

True density of cokes from blends—S.P. Nandi, K.A. Kini & A. Lahiri, CFRI, Jealgora, *Fuel*, **37** (1958), 508-509.

Some aspects of coal structure and constitution—M. S. Iyengar & A. Lahiri, CFRI, Jealgora. *Brennst Chemie*, **40** (1959), 8-30.

Coking coal and the steel industry—R.N. Bose, CFRI, Jealgora. *Indian Min. J.*, **6** (10) (1958), 1-3.

Cleaning of coal for the industries—G.G. Sarkar & S.K. Mitra, CFRI, Jealgora. *Iron and Steel Rev.*, **2** (1958), 393-96.

Some aspects of processing the newly discovered crudes of India —I.B. Gulati, A.N. Basu & A. Lahiri, CFRI, Jealgora. *Chem. Age, Bombay*, **10** (1959), 7-19.

Dehydrogenation of coal and tar formation—B.K. Mazumdar, S.K. Chakrabartty & A. Lahiri, CFRI. Jealgora. *Fuel*, **38** (1959), 112-14.

Aromaticity of coal : an appraisal—B. K. Mazumdar, S. K. Chakrabartty & A. Lahiri, CFRI, Jealgora. *Fuel*, **38** (1959), 115-18.

Physico-chemical aspects of the utilization of South Arcot lignite —A. Lahiri & M.S. Iyengar, CFRI, Jealgora. *Brennst Chemie*, 39 (1958), 230-35.

RESEARCH COMMITTEES

(*Contd. from p. 2, col. 3*)

Joint Committee of the Indian Central Oilseeds Committee and CSIR for Vegetable Oils Research—Dr. M. S. Randhawa (*Chairman*); President, Indian Central Oilseeds Committee, Hyderabad; Vice-President, Indian Central Oilseeds Committee; Agricultural Commissioner to the Government of India, New Delhi; Director, Indian Agricultural Research Institute, New Delhi; Dr. J.G. Kane; Shri Gopi Chand V. Sirur; Director, NCL, Poona (Dr. R.C. Shah, alternate member); Director, CFTRI, Mysore; Director, RRL, Hyderabad (Dr. S.A. Saletore, alternate member); Dr. D.R. Dhingra; Dr. N.C. Chatterji; Director-General, Scientific & Industrial Research or his representative; Dr. K.S. Murti; Shri S.H. Turner (*Members*); and Secretary, Indian Central Oilseeds Committee (*Secretary*).

Advisory Committee of Rain and Cloud Physics Research Unit—Dr. K.R. Ramanathan (*Chairman*); Dr. K.S. Krishnan; Dr. S. Basu; Shri S. Ramamritham; Sq. Ldr. S. Das Sarma; Shri P.R. Ahuja; Shri Baleshwar Nath; Shri C. Balasubramaniam; and Dr. D.S. Kothari (*Members*).

Wind Power Sub-Committee—Dr. P. Nilakantan (*Convener*); a representative each of the Central Water & Power Commission, Ministry of Community Development, Ministry of Food and Agriculture, Ministry of Health (Public Health Engineering), India Meteorological Department, Civil Aviation Department, and Khadi Village Industries Commission.

PERSONAL

(*Contd. from p. 1, col. 3*)

*SHRI T.S. RAJAGOPALAN has been appointed, on promotion, Documentation Officer, Insdoc, NPL, New Delhi, with effect from March 13, 1959.

*SHRI S. DUTTA has been appointed, on promotion, to officiate as Documentation Officer, Insdoc, NPL, New Delhi, with effect from March 13, 1959 *vice* Shri S. Parthasarthy.

*SHRI SOBI SINGH has been appointed, on promotion, to officiate as Junior Documentation Officer, Insdoc, NPL, New Delhi, with effect from March 13, 1959 *vice* Shri S. Dutta.

PATENTS & PROCESSES

Applications Filed

INDIA

65610; *A process for the production of chemically bonded metal clad or unclad basic refractories*—R. S. Mathur & H.V.B. Rao, NML, Jamshedpur.

66670: *Improvements in or relating to a device for the rapid classification of mica, micanite, laminated sheets and the like*—S.S. Mandal & S.B. Roy, CGCRI, Calcutta.

66803: *Improvements in or relating to the manufacture of pressure sensitive adhesive tapes*—S.L. Kapur & B.R. Rao, NCL, Poona.

66804: *A process for the conversion of peruvoside to ruvoside*—S. Rangaswami & E.V. Rao, Andhra University, Waltair.

66836: *Manufacture of ethylene dichloride*—S. C. Banerjee, S. L. Pathak, M.U. Pai & L.K. Doraiswamy, NCL, Poona.

U.S.A.

784,138: *Vehicle lamp fitting for vehicles*—C.R. Gupta, NPL, New Delhi.

Applications Accepted

61585: *A process for the manufacture of an ammonium phosphate-sulphate fertiliser*—J. Gupta, K. Seshadri, J. Lobo & M.N. Rao, NCL, Poona.

62336: *A new process for the conversion of coal, coke or the like into an ion-exchanger for water softening deionisation and the like*—B. K. Mazumdar, S.K. Chakrabartty, S.N. Roy & A. Lahiri, CFRI, Jealgora.

62337: *Improvements in the preparation of organic nitrogenous fertilizers*—P. N. Mukherjee & A. Lahiri, CFRI, Jealgora.

63685: *A process for the manufacture of light constructional material such as hard boards, laminates, blocks or the like*—V.N. Badami, C.S.B. Nair, A.N. Basu & A.N. Lahiri, CFRI, Jealgora.

64225: *Low melting chemically resistant glass compositions*—Atma Ram, S. Kumar & P. Nath, CGCRI, Calcutta.

Applications Sealed

59295: *A process for the production of alkali salts like alkalinimbidinates having medicinal properties from bitter constituents of nim*—C. Mitra, NCL, Poona.

60826: *Improvements in or relating to the production of hydroxy, alkoxy or aryloxy substituted deoxybenzoins and particularly of deoxyanisoin*—J.L. Bose & R.C. Shah, NCL, Poona.

Stanvac Fellowships

Applications are invited for Stanvac Fellowships for post-graduate study/training tenable in the U.S.A. The minimum qualifications required is first class M.Sc (in science subjects) or a first class graduate in engineering subjects. The awards will be made to the best qualified candidates in any of the following subjects: (1) *Chemical Engineering*; *(2) Mechanical Engineering ; (3) Industrial Engineering*; *(4) Petroleum Engineering*; *and* (5) *Geology*.

Applicants should be unmarried and not over 30 years of age. Employees of the Standard Vacuum Oil Company are not eligible to apply.

Scholars will receive a stipend of $200 per month plus tuition and other approved school fees, books and health insurance. Tourist class air passage will be provided for.

Applicants should furnish the following particulars in their applications: (1) Name in full and nationality; (2) date and place of birth; (3) address to which all communications should be sent; (4) particulars of school record of candidate; (5) university record of candidate with dates and particulars of places of study, subjects of study, degrees, classes, honours, etc.; (6) details of post-graduate training, research or employment and other experience, if any (details of published work, if any, with reprints); (7) present occupation and emoluments: (8) subject in which training is desired; (9) a copy each (attested by a Gazetted Officer) of the University degrees, diplomas, proof of age and at least two testimonials from professors under whom the candidate studied testifying his promise for post-graduate study or training; and (10) a passport size photograph.

Typed applications accompanied by a crossed Indian Postal Order for Rs. 7.50 (Rs. 1.87 in respect of candidates belonging to scheduled castes and scheduled tribes) should reach the Secretary, Council of Scientific & Industrial Research, Old Mill Road, New Delhi-1 by **April, 28 1959.**

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CSIR NEWS

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MYSORE

RESEARCH GRANTS FOR RETIRING SCIENTISTS

The Vice-President, CSIR, has been pleased to constitute a Committee to advise and assist the Council in the administration of the scheme on *Retiring Research Scientists*. The Committee consists of the following : Shri Humayun Kabir, Minister for Scientific Research & Cultural Affairs and Vice-President, CSIR (*Chairman*) ; Prof. M. S. Thacker, Dr. B.C. Guha, Dr. D.S. Kothari and Dr. P.K. Parija (*Members*).

PROF. M. S. THACKER

Prof. M.S. Thacker, Director-General, Scientific & Industrial Research, has been invited to be the Chairman of the *Board for Promotion of Small Inventions*, constituted by the Government of India with the object of giving encouragement to artisans and technicians with inventive skill to work out details of processes, appliances and gadgets. Awards and financial and technical assistance will be given to persons whose inventions in the sphere of small industries are of a distinctive character and of marked value to the development of small industries.

PERSONAL

●**Dr. Satinath Banerjee** has been appointed Senior Scientific Officer : Grade II, CFRI, Jealgora, with effect from March 26, 1959.

●**Dr. D. Chatterjee** has been appointed Senior Scientific Officer : Grade II, CFRI, Jealgora, with effect from April 1, 1959.

●**Dr. S.K. Gupta** has been appointed, on promotion, Senior Scientific Officer : Grade II, CDRI, Lucknow, with effect from Oct. 6, 1958.

●**Shri K. Kameswara Rao** has been appointed Mechanical Engineer, CBRI, Roorkee, with effect from Feb. 6, 1959.

●The following officers of the CFRI, Jealgora, have been appointed, on promotion, Junior Scientific Officers, with effect from the dates given against their names : **Sarvashri H.C. Nandi, A.R. Panicker, S. Ramchandran, D. Bagchi & R.N. Bose** (March 12, 1959) ; **Shri A.K. Moitra** (March 14, 1959) ; and **Sarvashri R. N. Kudwali, A.N. Mukherjee, S. C. Moitra, R.N. Bhattacharya & B. K. Verma** (March 16, 1959.)

●**Dr. L.M. Pant** has been appointed Junior Scientific Officer, NCL, Poona, with effect from March 3, 1959.

●**Shri A. Shankar** has been appointed, on promotion, officiating Junior Scientific Officer (Stores), RRL, Hyderabad, with effect from Feb. 6, 1959.

●**Shri Singhasan Rai** has been appointed Stores and Purchase Officer, CEERI, Pilani, with effect from April 6, 1959.

* * *

●**Dr. B.R. Nijhawan**, Director, NML, Jamshedpur, left for China and Japan on March 18, 1959 as a member of the Government of India delegation to study the working of the steel industry in those countries.

●**Dr. B. Mukerji**, Director, CDRI, Lucknow, has been nominated a member of the *Long-Range Man-Power Planning Study Group, General Education, Science and Technology* of the Uttar Pradesh Government.

●**Dr. B.M. Gupta**, Senior Scientific officer, CDRI, Lucknow, has been nominated a member of the *Board of Studies in Veterinary Science and Animal Husbandry* of Agra University for a period of three years.

●**Dr. K.N. Mathur**, Deputy Director, NPL, New Delhi, has been renominated a member of the *Electrotechnical Division Council* of the Indian Standards Institution.

(Contd. on p. 4, col. 1)

SHRI P.M. NABAR

Shri Parashuram Malhar Nabar has been appointed Officer-in-charge (Planning), Central Indian Medicinal Plants Organization (CIMPO) with effect from March 26, 1959.

Shri Nabar (b. Dec. 1898) graduated from the Bombay University and proceeded to U.K. for higher studies in pharmaceutical chemistry at the Manchester University under a State Technical Scholarship ; he also worked in the factories of *Burgoyne Burbidges & Co. Ltd.*, London. He returned to India in 1927 and worked for sometime as a consulting chemist. In 1929, he was appointed Advisory Chemist, Government Medical Stores Department at Madras, and thereafter at Bombay. He was appointed Chief Advisory Chemist in the Directorate General, Indian Medical Services (now Directorate General of Health Services) and Secretary, Drugs Technical Advisory Board in 1945. He served as Secretary, Indian Pharmacopoeial List Committee and Member-Secretary of the Indian Pharmacopoeia Committee. In April 1950, he was appointed Drugs Controller, Government of India and in Dec. 1956, Officer-on-Special Duty (Drugs Standard Control) in the Ministry of Health. He has been a Director of the *Hindustan Antibiotics Ltd.*, Pimpri since its establishment. He was associated with various committees connected with the pharmaceutical and drugs industry.

Shri Nabar is a Fellow of the Royal Institute of Chemistry. He is a member of the Pharmacy Council of India, the Indian Pharmacopoeia Committee, and the Expert Advisory Panel on International Pharmacopoeia and Pharmaceutical Preparations set up by WHO.

BRIEFS

CPHERI Bulletin

The Central Public Health Engineering Research Institute, (CPHERI) Nagpur has started a quarterly bulletin for providing information on the progress of public health engineering in India and abroad. Besides research papers and articles bearing on public health engineering, the Bulletin will include digests of current literature published in other journals and reviews on books and periodicals.

The inaugural issue (No. 1, January 1959) includes 9 papers presented at the symposium on 'Water Purification and Stream Pollution' held in Oct. 1958 at New Delhi under the joint auspices of the CPHERI and Central Public Health Engineering Organisation (*CSIR NEWS*, Vol. 8, No. 20, p. 4) and 6 other papers pertaining to waste stabilization ponds, water supply & sanitation, filtration rates and sewage pumping. Reference books and serial publications in the field of public health engineering and particulars of public health engineers working in various States and Centre are listed.

DTA Bibliography

Differential Thermal Analysis (as applied to building science) is the title of an annotated bibliography published by the *Central Building Research Institute*, Roorkee. The technique of differential thermal analysis (DTA) is more widely applied to the study of clays and other minerals than X-ray, chemical analysis, optical analysis and others because of its simplicity and reliability of the results obtained.

The bibliography, prepared by Sarvashri V. S. Ramachandran and S. P. Garg is divided into six sections, namely (1) experimental technique, (2) theoretical considerations, (3) applications of DTA to the qualitative and quantitative estimation of clay minerals, (4) building limes, plasters and cements, (5) accessory minerals and (6) general articles on DTA and its application in varied fields. The more important results obtained through the application of DTA have been summarised in the introduction. The references under each section are arranged alphabetically according to the names of authors. A general author index and subject index are appended.

Copies of the bibliography (Price Rs. 5) are available from the Assistant Director (Information), Central Building Research Institute, Roorkee.

* * *

The *Central Building Research Institute*, Roorkee has been recognised as an approved institution by the Bombay University for the purpose of guiding students for M.Sc. and Ph.D. degree (by research) in chemistry.

'Indians Abroad' Directories

The National Register Unit, CSIR, has published two more Directories in the series 'Indians Abroad'. Directory No. E-6 contains particulars of 182 engineers; Directory No. ST-6 contains details relating to 198 scientists and technologists.

Research Schemes Terminated

The following research schemes have been terminated with effect from Feb. 28, 1959:

1. *Development of free piston compressors*—Dr. N.S. Nandeeswaraiya, College of Military Engineering, Kirkee, Poona.

2 & 3. *Carbohydrate metabolism as affected by the administration of sulpha drugs, paludrine and antibiotics*; *Adrenal steroids and vitamin C in relation to diabetes*—Dr. S. Banerjee, Presidency College, Calcutta.

The following research schemes have been terminated with effect from March 31, 1959:

1. *Study of the fading of radio signals*—Prof. S.R. Khastgir, Calcutta University, Calcutta.

2. *Development of small scale electronic computers*—Prof. P.V.V.S. Sastry, Madras Institute of Technology, Madras.

3. *Anthoxanthins & bioflavonoids in foodstuffs*—Dr. (Miss) B. Puri, Lady Irwin College, New Delhi.

4. *Some aspects of oceanographic research*—Prof. C. Mahadevan, Andhra University, Waltair.

5. *Molecular weight determination by X-ray*—Prof. G.N. Ramachandran, Madras University, Madras.

6. *Mechanism of explosions*—Dr. N.R. Tawde, Karnatak University, Dharwar.

7. *X-ray emission and absorption spectra in the region 1.8 to 10A*—Dr. G. B. Deodbar, Allahabad University, Allahabad.

8. *Electron diffraction studies*—Dr. K.R. Dixit, Gujrat College, Ahmedabad.

9. *Spectral studies of heterocyclic aromatic compounds*—Dr. M.R. Padhye, University of Bombay, Bombay.

Dr. Rajendra Prasad, President of India, conferred Padma Shri on Dr. Atma Ram, Director, CGCRI, Calcutta, at an investiture ceremony held at Rashtrapati Bhavan on April 8, 1959.

RESEARCH IN PROGRESS

National Laboratories

National Metallurgical Laboratory, Jamshedpur

Hot Stage Microscopy—An apparatus for hot stage microscopy has been designed. The apparatus is useful for studying high temperature phase equilibria of refractories, slags, glass, cement, etc. and has advantages over the classical quench method for the quick determination of melting point, direct observation of primary phase of crystallisation from the melt, and crystal growth.

A novel feature of the apparatus is the use of a thermocouple which acts both as a heating element and a temperature measuring device. A high speed relay is used to facilitate simultaneous heating and temperature measurement. The current from the mains passes through the thermocouple during alternate half cycles, while during the other half cycles, the temperature is recorded. The thermocouple is made of a special alloy and errors due to variation of the reference junction temperature have been minimised.

Central Electrochemical Research Institute, Karaikudi

Cathodic Protection of Metals—A new technique has been developed for quickly assessing the current requirement for cathodic protection of metals under different conditions. The technique has been employed for estimating the current required for the complete protection of basis metal in electrolytic cleaning baths.

Central Electronics Engineering Research Institute, Pilani

Multicavity Magnetron—Multicavity magnetron vacuum tubes (used for generating high power microwave signals for use in radar sets) have been fabricated utilising tools, jigs and fixtures developed at the Institute. The magnetrons compare in performance to imported tubes in tests with SCR584 Radar Set. The magnetrons operate at 2800 Mc/s and produce peak pulsed power output of 250 kW.

Central Food Technological Research Institute, Mysore

Pepper Sal—A composite preparation called 'Pepper Sal' (a flavouring agent) containing the active constituents of pepper on a salt base has been developed. The preparation makes use of pepper rejections and wastes which contain the active ingredients amenable to extraction and utilization.

Sponsored Research

Refining of *Nim* Oil—Although *nim* seed is abundantly available throughout India, the problem of purifying *nim* oil and utilising it in industry had not received adequate attention till recently.

As a result of exhaustive studies extending over a period of 10 years at the National Chemical Laboratory, Poona, the fatty acid and glyceride composition of *nim* oil have been worked out; the non-fatty constituents have been isolated and characterised; and methods have been developed for refining, bleaching, deodorisation and hydrogenation of alcohol-extracted oil.

Under a partial financial grant from the Indian Central Oilseeds Committee, the studies have been extended to the pilot plant scale. Tentative cost data for the separation of bitter constituents and for refining, bleaching. etc. of alcohol-extracted *nim* oil have been worked out—C.R. Mitra, NCL, Poona.

Utilization of Slag in Cement Making—Investigations on the suitability of blast furnace slags for cement making have shown that Portland blast furnace cement can be manufactured by replacing cement clinker (up to 60 per cent) by granulated slag. The addition of slag increases the chemical resistance of cement to sulphate solutions, water containing carbon dioxide and water containing acetic acid.

The slags are also suitable for the manufacture of sursulfated and clinkerless cement. Clinkerless cement is obtained from slag by using lime and gypsum as activators; it is comparable to Portland cement in strength.

Studies on the hydration of slag during the setting and hardening of Portland blast furnace cement have revealed that for a particular mixture of slag and Portland cement, the strength of cement increases with the increase of hydration; in the case of cements of different compositions, those which are rich in slag hydrate less for the same strength.

The mechanism of slag hydration has been studied and the compounds formed as a result of the hydration have been identified—D. LAHIRI, University College of Science and Technology, Calcutta.

NML, JAMSHEDPUR—Apparatus for hot stage microscopy designed and fabricated at the Laboratory

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DR. S. K. BARAT

DR. S.K. BARAT has been appointed, on promotion, Asst. Director, CLRI, Madras, with effect from Oct. 16, 1958.

Dr. Barat (b. Nov. 4, 1924) graduated from the Calcutta University and proceeded to U.K. in 1948 for higher studies in leather technology under a West Bengal Govt. Industrial Scholarship. During his stay in U.K., he worked on Indian vegetable tanning materials in the Leather Industries Department, University of Leeds. He also worked for sometime as a guest investigator at the Swedish Tanning Research Institute, Stockholm. He got practical training in tanneries, chemical factories and research laboratories in Germany and visited important leather research centres in U.S.A.

Dr. Barat has published a large number of papers on leather chemistry and leather technology with particular reference to the Indian tanning industry. He is a Member of the British Society of Leather Trades' Chemists, Institution of Rubber Industry (London), and various scientific societies.

PERSONAL

(Contd. from p. 1 col. 2)

- **DR. S. A. SALETORE**, Deputy Director, RRL, Hyderabad, has been nominated a member of the Sub-Committee for *Bleaching Earths* of the Indian Standards Institution.
- **DR. G S. SIDHU**, Asst. Director, RRL, Hyderabad, has been nominated a member of the *Chemical Division Council* of the Indian Standards Institution.

* * *

- **SHRI S.N. GHATAK**, Junior Scientific Officer, CDRI, Lucknow, has been awarded the Ph.D. Degree by the Agra University for his thesis, *Studies on the biochemical changes with special reference to vitamin C in condition of stress (fracture) and studies on the enzymic make-up of* Salmonella typhosa.
- **SHRI MANSA RAM**, Senior Scientific Assistant, NCL, Poona, has been awarded the Ph.D. degree by the Panjab University for his thesis, *Studies on tryptophan and its peptides.*

PATENTS & PROCESSES

Applications Filed

INDIA

65556 : *A process for electrolytic production of iron-chromium alloys from chromite ore*—P.B. Chakravarti & T. Banerjee, NML, Jamshedpur.

66886 : *A new bonding agent for the manufacture of abrasive articles, cast and moulded articles or the like*—V. Nagarajan & R.T. Thampy, Shri Ram Institute for Industrial Research, Delhi.

66953 : *Process for preparation of ethylene oxide*—H. Ibrahim, V.V. Deshpande & N.R. Kuloor, Shri Ram Institute for Industrial Research, Delhi.

66966 : *An improved process for the manufacture of porous rigid filters*—S.L. Kapur & R.N. Pandya, NCL, Poona.

U.K.

2264 : *Improvements in or relating to a vehicle lamp fitting for vehicles*—C.R. Gupta, NPL, New Delhi.

Application Accepted

63083 : *A new method for the preparation of 4-hydroxycoumarins*—V.R. Shah, J.L. Bose & R.C. Shah, NCL, Poona.

Applications Sealed

INDIA

60828 : *Manufacture of artificial porcelain teeth*—Atma Ram, N.V. Raghunath & S.K. Chakravarty, CGCRI, Calcutta.

60863 : *Manufacture of 1-ethoxy-2-hydroxy-4-propenyl benzene*—S. Mehboob. V.D.N. Sastri, K. Ramachandra & S.H. Zaheer, RRL, Hyderabad.

61439 : *Preparation of 2-hydroxy and 2-chlorothiazoles containing phenolic residues in position 4*—K.S. Narang, H.S. Sachdev & K.S. Dhami, Panjab University, Hoshiarpur.

61645 : *A new process for the manufacture of precast doubly-curved shell elements for roofs, floors and panel walls*—J.S. Ramaswamy & S.M K. Chetty, CBRI, Roorkee.

62302 : *A process for the preparation of 1-w ketodicarboxylic acid (or ester) suitable for the preparation of civetone and dihydrocivetone*—K. K. Chakravarti & S. C. Bhattacharyya, NCL, Poona.

62338 : *An improved method for producing nitrided manganese*—T. Banerjee, P.P. Bhatnagar & M.K. Gupta, NML, Jamshedpur.

GERMANY

C 10 359 IVa/12i : *Improvements in or relating to ion-exchangers from coal, peat, lignite or the like*—R.P. Puri & P.K. Banerjee, CFRI, Jealgora.

Processes Leased Out

The following processes developed by the national laboratories have been leased out for commercial development. The parties to whom the processes have been leased out are mentioned against each process.

1. *Copper enamels* (CGCRI, Calcutta : Indian Pat. No. 54433)—M/s Kalyani Industries, Calcutta.
2. *Wet grinding of mica* (CGCRI, Calcutta : Indian Pat. No. 55454)
3. *Silver mica capacitors* (NPL, New Delhi : Indian Pat. No. 53528)—M/s. Manilal Mohan Lal & Co., Bombay.

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CSIR NEWS

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TECHNOLOGICAL RESEARCH INSTITUTE LIBRARY 26.5.59

PROF. HUMAYUN KABIR INAUGURATES THE BIRLA INDUSTRIAL & TECHNOLOGICAL MUSEUM

The Birla Industrial & Technological Museum at 19-Gurusaday Road, Calcutta, was formally opened by Prof. Humayun Kabir, Union Minister for Scientific Research & Cultural Affairs and Vice-President, Council of Scientific & Industrial Research, at a function held on May 2, 1959. Dr. B.C. Roy, Chief Minister, West Bengal and Chairman of the Museum Planning Committee, presided. Shri B.M. Birla, leading citizens, educationists and industrialists attended the function.

Welcoming the guests, Prof. M.S. Thacker, Director-General, Scientific & Industrial Research, said that it had been his wish as the head of the Council to be closely associated in establishing the first industrial & technological museum in India. He hoped that the progress of the Museum would be rapid henceforth and that the industrialists would help the Museum with models, exhibits and charts of various industrial machinery and products.

Prof. Kabir, while declaring open the Museum, thanked the Birlas for their munificence and remarked that co-operative endeavour between scientists was the fundamental basis on which diffusion of scientific knowledge rested. The museum was one of the means wherefrom knowledge on a mass scale could be imparted, a facility which neither a school nor a university could so easily afford to impart. The museum could rightly be called a modern university. He hoped that the Museum would prove to be of great benefit to students not only to be acquainted with scientific knowledge but also to develop scientific outlook and temperament.

The Museum, at present, is planned to include models pertaining to electrical communication, electric power generation and transmission, textile engineering, chemical technology and mining & metallurgy. These models will portray (1) recent advances in technology, (2) contribution of technology to the welfare of mankind and (3) application of modern methods of technology in the Indian industries.

Each gallery has been designed to present to the visitor a sequential educational story. In the gallery on "Electricity", the evolution of static electricity, current electricity, electromagnetism, etc. has been depicted. The various applications of electricity have been shown by means of simple working models, which the visitors can operate themselves. The gallery on "Petroleum" portrays the origin of oil and the techniques employed in detecting oil deposits inside the earth's crust. The working of a modern refinery is demonstrated and the numerous products obtained from crude petroleum are displayed.

Birla Industrial & Technological Museum, Calcutta

PERSONAL

- **Dr. B.H. Wadia**, Asst. Director-in-charge, CEERI, Pilani, relinquished charge of his post with effect from April 15, 1959, consequent on his appointment as Asst. Professor, Indian Institute of Technology, Bombay.
- **Dr. Amarjit Singh**, Asst. Director, CEERI, Pilani, has been officiating as Asst. Director-in-charge, CEERI, Pilani, with effect from April 15, 1959.
- **Shri N. B. Panjwani** has been appointed Senior Scientific Officer: Grade II, CMERI, Durgapur, with effect from April 6, 1959, on transfer from CFRI, Jealgora.
- **Shri O. P. Sharma** has been appointed, on promotion, Officer-on-Special Duty (Hindi Editing), Publications Directorate, with effect from May 5, 1959.
- **Dr. G. C. Chatterjee** has been appointed Junior Scientific Officer, IIBEM, Calcutta, with effect from March 5, 1959.

(Contd. on p. 4, col. 2)

NEW RESEARCH SCHEMES SANCTIONED

On the recommendation of its Advisory Board, the Governing Body of the Council have sanctioned the following new research schemes.

BIOLOGICAL RESEARCH COMMITTEE

1. *Cyto-taxonomical and morphological studies in Rhamnaceae*—Dr. K. Subramanyam, Botanical Survey of India, Coimbatore.

2. *Cytology of the endosperm of some Indian plants*—Dr. S.L. Tandon, University of Delhi, Delhi.

3. *Factors controlling growth and reproduction in mosses*—Dr. G.C. Mitra, Delhi University, Delhi.

4. *Studies on some botanical aspects of oceanography off the Visakhapatnam coast*—Dr. T. Sreeramulu, Andhra University, Waltair.

5. *Cyto-taxonomic revision of Indian Commelinaceae*—Shri R.S. Rao & Dr. G. Panigrahi, Botanical Survey of India, Shillong.

6. *Studies on the enzyme systems in ciliate protozoa*—Dr. B.R. Seshachar, Central College, Bangalore.

CIVIL ENGINEERING & HYDRAULIC RESEARCH COMMITTEE

7. *Application of photogrammetry and De Moire's Fringes to structural problems*—Dr. Jai Krishna & Shri H.L. Oswal, University of Roorkee, Roorkee.

8. *Evaluation of resistances of a rippled transporting bed*—Shri Amrit Kumar, M. B. M. Engineering College, Jodhpur.

9. *Ultimate strength of reinforced concrete beams in combined bending and shear*—Shri K. Subbian, P.S.G. College of Technology, Coimbatore.

10. *Axial flow pump research: design of improved axial flow impellers based on cascade theory and vortex theory*—Prof. N.S. Govinda Rao & Shri K. Seetharamiah, Indian Institute of Science, Bangalore.

ELECTRICAL & MECHANICAL ENGINEERING RESEARCH COMMITTEE

11 & 12. *Investigation on surge voltage distribution in transformer windings and impulse strength of transformer; Evaluation of the deterioration of transformer oil during controlled ageing in the laboratory*—Prof. D.J. Badkas, Indian Institute of Science, Bangalore.

13. *Self-excited alternator*—Shri M. Maria Louis, P.S.G. College of Technology, Coimbatore.

ESSENTIAL OILS RESEARCH COMMITTEE

14. *Preparation of industrially important sesquiterpenes*—Dr. P.C. Dutta, Indian Association for the Cultivation of Science, Calcutta.

METALS RESEARCH COMMITTEE

15. *Studies on the hydraulic and other properties of granulated blast furnace slags in relation to composition*—Dr. Durgadas Lahiri, University College of Science & Technology, Calcutta.

16. *Determination of the specific heats of the raw materials for the blast furnace*—Dr. D. Swarup & Dr. Rajendra Kumar, Banaras Hindu University, Varanasi.

17. *Development of age-hardenable alloys from Indian commercial aluminium*—Dr. A.A. Krishnan, Dr. T.R. Anantharaman & Shri B.S. Subramanya, Indian Institute of Science, Bangalore.

18. *Adibasi furnaces for iron extraction and the need for further experiments to improve their efficiency*—Shri Moni Ghosh (Sarva Seva Sangh).

PHARMACEUTICALS AND DRUGS RESEARCH COMMITTEE

19. *Pharmacological studies on a new antitubercular antibiotic*—Dr. S. Chandrasekhar. Vallabhbhai Patel Chest Institute, Delhi.

RADIO RESEARCH COMMITTEE

20. *Study of the variation of the angle of arrival of the downcoming radio waves from the ionosphere*—Dr. S.S. Banerjee, Banaras Hindu University, Varanasi.

21. *Study of properties of semi conductors and transistors*—Dr. G.P. Srivastava, Gorakhpur University, Gorakhpur.

BRIEFS

Prime Minister Visits CECRI

Shri Jawaharlal Nehru, Prime Minister, accompanied by Shri C. Subramaniam, Finance Minister, Govt. of Madras and Chairman, Executive Council, CECRI, Karaikudi, Shri K. Kamraj Nadar, Chief Minister and Shri M. Bhakthavatsalam, Home Minister of Madras, visited the Central Electrochemical Research Institute, Karaikudi on April 15, 1959. Dr. K. S. G. Doss, Director of the Institute, took them round and explained to them some of the completed investigations and the problems under investigation. Later, the Prime Minister addressed the staff of the Institute.

NCL Rubber Project

The Vice-President, CSIR, has been pleased to accord sanction to the establishment of a Rubber Research Project at the *Polymer Division* of the *National Chemical Laboratory*, Poona in collaboration with the Indian Rubber Manufacturers' Research Association.

CLRI Extension Service

The Central Leather Research Institute, Madras, has started an Extension Service for practical demonstration of the processes developed at the Institute. The Extension Service Team constituted for the purpose has drawn a programme of demonstration in different parts of the country. The demonstrations, started in the month of April 1959, will continue till Jan. 15, 1960.

The processes selected for demonstration at different centres in Madhya Pradesh, Panjab, Rajasthan, Orissa and West Bengal States include: (1) Madras tanning of cow hides; (2) Improved bag tanning; (3) Improved colouring methods of vegetable tanned leathers; (4) Simple chrome tanning for *charas*; (5) *Kattai* tanning; (6) Manufacture of E. I. buff calves or *kattais*; (7) Improved Madras tanning of sheep skins; (8) Improved *charas* tanning by stuffing of chrome; and (9) Glazed kid tanning.

The processes and the centres where the demonstrations have been arranged for the months of May and June, 1959 are given below:

1. *Improved bag tanning*—Tanners' Colony, Abu Road, Rajasthan (May 4–20, 1959).
2. *Madras tanning of cow hides: Improved bag tanning*—Khadi Boards Tannery, Dewas, Madhya Pradesh (May 10 to June 9, 1959).
3. *Improved* charas *tanning by stuffing of chrome; Improved bag processes*—Co-operative Tannery, Pindwara Block, Rajasthan (May 25 to June 10, 1959).
4. *Madras tannage of sheep skins*—Haji Hasan Nabibaksh Tannery, Nazirabad, Rajasthan (June 1–30, 1959).

(*Contd. on p. 4, col. 3*)

RESEARCH IN PROGRESS

National Laboratories

Central Fuel Research Institute, Jealgora

Phenols from Higher Tar Acids—Considerable quantities of higher tar acids produced in the course of low temperature carbonization and high temperature hydrogenation of coals in India do not find significant use in industry.

A process has been developed at the Institute for the conversion of higher tar acids to phenol and cresols.

The process consists in the catalytic hydrogenolysis of tar acids in two stages in the presence of steam and/or pyridine. In the first stage, the tar acids (b.p., 130°C./10 mm.) are catalytically hydrogenated to phenols (b.p., 100°C./10 mm.) using hydrogen or gas rich in hydrogen. In the second stage, the phenols obtained in the first stage are converted to cresols by hydrogenolysis in the presence of a second catalyst —N. C. Saha, N. G. Basak & A. Lahiri.

Central Electrochemical Research Institute, Karaikudi

Electrolysis of Sodium Sulphate—The vertical type of mercury cell for the electrolysis of sodium sulphate designed at the Institute (*CSIR News*, Vol. 8, No. 15, p. 3) has been further improved by making both sides of the lead alloy anodes effective for electrolysis and by having easily replaceable anode chambers in one single cathode chamber. The modified cell is easy to assemble; there is saving in anode material, reduction in the overall weight of cell and further saving in space. The cell (150 amp.) yields 50 per cent caustic soda and 230 g./l. sulphuric acid with 150 g./l. sodium sulphate as anolyte with over 90 per cent current efficiency at a cell voltage of 4·5. Design and fabrication of a pilot plant unit (capacity, 2·5 cwt. of sodium sulphate per day) have been taken up.

Sponsored Research

Coke from High Ash and High Volatile Coals—Pilot oven and full scale oven tests have been carried out using blends of high ash and high volatile coals with a view to study the properties of coke obtained.

The pilot oven tests were undertaken with blends of (1) washed coal from Jamadoba and West Bokaro in admixture with coals from the Bhojudih area; (2) Ghordewa seam coal (Korba coalfields) to ascertain the coking properties of the coal in view of the projected Government Steel Plant in Madhya Pradesh; and (3) Hatnal seam coal (Raniganj coalfield) in admixture with washed Jamadoba-Bokaro coal mixture to ascertain the possibility of blending this high volatile poorly coking coal for producing blast furnace coke. The test results have indicated that hard and soft coke—according to Breslau index—could be produced using different proportions of coals with varying grain sizes and moisture contents.

Full scale oven tests carried out to confirm the pilot oven test results (*CSIR News*, Vol. 8, No. 20, p. 3) in Tata's Commercial Coke Oven with blends containing (1) Dishergarh seam coal (Raniganj coalfield) and Lakurka 11 seam coal (Jharia coalfield), and (2) Poniati seam coal (Raniganj coalfield) and Lakurka 11 seam coal have indicated that hard coke—according to Breslau index—could be obtained. The ash content of the coke obtained from the two different blends is 21·48 and 22·24 per cent respectively —Coal Blending & Coking Research Committee, Jamshedpur.

Production of Riboflavin by a Mutant Strain of Yeast—A cheap synthetic medium for the production of riboflavin (vitamin B_2) by a mutant strain of yeast obtained by the treatment of a brewery bottom yeast with acenaphthene has been developed. Employing this medium under optimum conditions of fermentation (worked out as a result of a series of experiments), 200 μg./l. of riboflavin have been obtained after five days of fermentation in a static flask. Submerged fermentation gives remarkably high yields of yeast but does not give consistent results in regard to riboflavin production—K.K. Mitra & Ashis K. Sen Gupta, Jadavpur University, Calcutta.

Sugarcane Wax—The soft wax portion of commercial Indian sugarcane wax has been isolated and its chemical characteristics have been studied.

The soft wax is obtained by extracting the commercial product with hot toluene, removing toluene, re-extracting with hot alcohol, crystallising and taking up again in hot acetone, cooling and evaporation of the filtered acetone extract.

Chemical examination of the non-saponifiables of the soft wax has revealed the presence of β-sitosterol in fair quantity—K. N. Menon & M. Krishnan, University of Madras, Madras.

RESEARCH FELLOWSHIPS

The following have been awarded *CSIR Fellowships* for research on the schemes noted against their names:

Senior Fellowships

1. Shri M.L. Bhaskara—*Absolute value of rate constants in polymerisation* (Indian Association for the Cultivation of Science, Calcutta).
2. Shri Ratindra Nath Roy—*Studies in cell metabolism* (University College of Science & Technology, Calcutta).
3. Shri Rajinder Aneja—*A chemical study of the chromogenic factors of cottonseed and pongam oils* (University of Delhi, Delhi)
4. Dr. A. G. Mulgaonkar—*Mode of action of tetracycline antibiotics in micro-organisms and animals* (Department of Chemical Technology, Bombay).
5. Shri Ehasanullah Khan—*Explorations for the remains of early man* (Panjab University, Chandigarh).

Junior Fellowships

1. Shri K. K. Vin—*Fundamental study of the interaction between soils and well known stabilisers such as calcium chloride, sodium silicate* (Field Research Station, Bombay).
2. Shri Tapas Kumar Pradhan—*Studies on enzymes from some vegetable sources* (School of Tropical Medicine, Calcutta).
3. Shri Mohan C. Balani—*Investigation of the significance and value of various biological indices* (Delhi University, Delhi).

Dr. R. C. Shah

Dr. R.C. Shah has been appointed, on promotion, Deputy Director, NCL, Poona, with effect from April 6, 1959.

Dr. Shah (b., 1899, Surat Dt., Bombay State) graduated from Wilson College, Bombay (1920), with first class honours in Physics and Chemistry and worked as a research scholar at the Indian Institute of Science, Bangalore (1921-24). He obtained his M.Sc. degree by research from the Bombay University (1925), and joined the staff of the Institute of Science, Bombay. In 1929, he proceeded to England (under Sir Mangaldas Nathubhoy Foreign Scholarship of the Bombay University) where he worked with Prof. Sir Robert Robinson at the University College, London and the Dyson Perrins Laboratory, Oxford and obtained his Ph.D. degree from the London University.

He returned to India in 1931 and was appointed Head of the Chemistry Department, Ismail College, Bombay and in 1938, was appointed Professor of Organic Chemistry at the Institute of Science, Bombay where he developed a school of research in organic chemistry. He worked as Development Officer (Antigas) and later as Deputy Director (Chemicals) in the Supply Department of the Government of India (1942-44). In 1950, he joined NCL as Assistant Director and has been working as Head of the Organic Chemistry Division of the Laboratory.

Dr. Shah has published about 150 research memoirs and has to his credit 10 patents. His researches in organic chemistry relate mainly to imidochlorides, γ-substitution in the resorcinol nucleus, coumarins and chromones, chemistry of plant products and synthetic drugs. He is a Fellow of the National Institute of Sciences of India and a member of the Council of the Indian Chemical Society. He has been elected as the Sir P.C. Ray Memorial Lecturer of the Indian Chemical Society for 1959.

Dr. Ram Parshad

Dr. Ram Parshad has been appointed, on promotion, Asst. Director, NPL, New Delhi, with effect from Oct. 18, 1958.

Dr. Parshad (b.,Jan. 1915) obtained his M.Sc. and D.Sc. degrees in Physics from the Panjab University in 1937 and 1946 respectively. In 1947, he left for U.S.A. under a Government of India scholarship and during his 2½ years stay abroad, he was guest worker at Massachusetts Institute of Technology, Cambridge and Columbia Radiation Laboratory, New York City. On his return to India, he joined NPL (August 1950) and has carried out investigations on various fields of electronics (particularly pulse technique and microwave electronics), ultrasonics, liquid structure and film formation on metals. His work for elucidating the behaviour of elastic waves in liquids as a function of intermolecular forces merits special mention.

PERSONAL

(Contd. from p. 1, col. 3)

●SHRI A. N. CHATTERJEE has been appointed, Junior Scientific Officer, IIBEM, Calcutta, with effect from March 5, 1959.

* * *

●DR. A. LAHIRI, Director, CFRI, Jealgora, left for France on April 24, 1959 for attending the International Coal Science Conference under the Indo-German Economic and Technical Cooperation Agreement.

●DR. N.G. BASAK, Asst. Director, CFRI, Jealgora, will perform the duties of the Director, CFRI, as Asst. Director-in-charge during the period of deputation abroad of Dr. A. Lahiri.

* * *

●SHRI P.M. NABAR, Officer-in-charge (Planning), Central Indian Medicinal Plants Organisation (CIMPO), has been renominated a member of the *Development Council for Drugs, Dyes and Intermediates* under the Ministry of Commerce and Industry.

●SHRI P. G. SURANGE, formerly Research Assistant in the scheme *Study of the Scattering of Radio Waves*, has been awarded the Ph. D. degree by the Banaras Hindu University, Varanasi.

PROCESS READY FOR EXPLOITATION

PRECAST DOUBLY CURVED SHELL ELEMENTS

The *Central Building Research Institute*, Roorkee, has developed a simple and cheap method for precasting of doubly curved shell elements for use in the construction of roofs, floors and panel walls (Indian Pat. No. 61445).

Individual units prepared by this method have been tested for static and shock loads. They withstood, on an average a static load of 350 lb./sq. ft. The shell elements give ample safety against static, sustained and shock loads. The roofs made from them are economical. Compared with the traditional R.C.C. slabs, a saving of up to 49 per cent in cement and 46 per cent in steel is possible. The turnover is quick and no skilled labour is necessary for casting.

The process in current use for casting doubly curved shells involves the use of extensive moulds, if precast, and complicated shuttering if cast *in situ*. Shifting of the shuttering from place to place is both cumbersome and difficult.

Parties interested in the commercial development of the process may write to the Secretary, National Research Development Corporation, Mandi House, Lytton Road, New Delhi-1.

BRIEFS

(Contd. from p. 2, col. 3)

Research Schemes Terminated

The following research schemes have been terminated on completion of work, with effect from Feb. 28, 1959.

1. *Studies in the morphology, embryology and cytology of the Pandanales*—Dr. I. Banerjee, Calcutta University, Calcutta.

2. *D.C. generator without communicators*—Flt. Lt. M. Yoganandam, Directorate of Technical Services, New Delhi.

3. *Automatic D.N. Trainer for navigators*—Flt. Lt. Vir Narain, No. 5 Squadron, Air Force, Agra.

Printed at Asia Press, Delhi-7, and Published by the Council of Scientific & Industrial Research, Old Mill Road, New Delhi-1.

CSIR NEWS

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CENTRAL FOOD LIBRARY

Symposium on Civil Engineering and Hydraulics Research

A symposium on Civil Engineering and Hydraulics Research has been arranged by the Civil Engineering & Hydraulics Research Committee of the CSIR at the Roorkee University, Roorkee, from June 15 to June 18, 1959. The object of the symposium is to review the current state of knowledge in important broad fields of civil engineering and hydraulics. Prof. M.S. Thacker, Director-General, Scientific & Industrial Research, has kindly consented to inaugurate the symposium.

The occasion will be availed of by the Committee for evaluating the progress of research schemes and planning the future programme.

Colloid Research Unit

On the recommendation of the Chemical Research Committee, the Governing Body has approved the setting up of a Colloid Research Unit at the University College of Science & Technology, Calcutta. The following research schemes under investigation at the College will be merged in the Unit: (1) Application of a new distribution formula to problems of strong electrolytes in solution and of colloidal systems and (2) Studies on stability and electrokinetic potential of colloids.

PERSONAL

●Shri N. Ramakrishna, formerly Director of Administration, Directorate General of Civil Aviation, Union Ministry of Transport & Communications, has been appointed Deputy Secretary, CSIR, with effect from May 14, 1959.

●Shri R. P. Pathak has been appointed, on promotion, to officiate as Deputy Secretary, CSIR, with effect from March 30, 1959 *vice* Shri K.G. Krishnamurthi on leave.

●Dr. S.K. Pande has been appointed Professor attached to the laboratory, NBG, Lucknow, with effect from April 23, 1959.

●Dr. I.B. Gulati has been appointed, on promotion, Senior Scientific Officer : Grade I, CFRI, Jealgora, with effect from April 7, 1959.

●Dr. P. K. Banerjee has been appointed, on promotion, Senior Scientific Officer: Grade I, CFRI, Jealgora, with effect from April 7, 1959.

●Dr. Uma Shankar has been appointed, on promotion, Senior Scientific Officer : Grade I, NCL, Poona, with effect from April 27, 1959.

●The following have been appointed, on promotion, Senior Scientific Officers : Grade II, NCL, Poona, with effect from April 16, 1959 : Dr. M. Goswami and Shri S. C. Banerjee.

●Sarvashri B. K. Nayar and V. Chandra have been appointed, on promotion, Senior Scientific Officers : Grade II, NBG, Lucknow, with effect from April 29, 1959.

●Sarvashri C. Ray and O.P. Babbar have been appointed, on promotion, Junior Scientific Officers, CDRI, Lucknow, with effect from April 25, 1959.

●The following have been appointed, on promotion, Junior Scientific Officers, NCL, Poona, with effect from April 16, 1959: Dr. J.P. Verma, Dr. Mansa Ram, Shri M.V. Kunte and Shri G.V. Potnis.

●Shri J.A. Patel has been appointed on promotion, Junior Scientific Officer, CBRI, Roorkee, with effect from April 7, 1959.

* * *

●Shri G.P. Mathur, Senior Scientific Officer : Grade II, NML, Jamshedpur, left for U.K. for training in *Ore beneficiation, sintering and pelletising* under the Colombo Plan.

* * *

●Dr. B.R. Nijhawan, Director, NML, Jamshedpur, has been nominated a member of (1) the reconstituted *Metallurgy Advisory Committee* of the *Department of Atomic Energy* and (2) *Engineering Division Council* of the *Indian Standards Institution.*

●Dr. Y. Nayudamma, Director, CLRI, Madras, has been nominated a member of the Technological Research Sub-Committee of the *Indian Central Arecanut Committee*, Kozhikode.

●Dr. Amarjit Singh, Asstt. Director-in-charge, CEERI, Pilani, has been nominated a member of the Electrochemical Division Council of the *Indian Standards Institution* in place of Dr. B.H. Wadia.

●Shri G.D. Joglekar, Asst. Director, NPL, New Delhi, has been nominated a member on the *Devolopment Council for Light Electrical Industry*, Union Ministry of Commerce & Industry.

●Dr. N. L. Lahiry, Asstt. Director, CFTRI, Mysore, has been nominated a member of the Poultry Committee of the *Indian Council of Agricultural Research.*

●The following officers of the NPL, New Delhi, have been nominated members of the Committees of the Indian Standards Institution noted against their names :

Shri R.K. Tandon, Senior Scientific Officer—*Automobile Electrical Equipment Sectional Committee.*

Dr. M. L. Khanna, Senior Scientific Officer—*Standard Methods of Tests & Sampling Sub-Committee.*

* * *

●Kumari A. Thangamani, Senior Scientific Assistant, NCL, Poona, has been awarded the Ph.D. degree by the Madras University for her thesis : *Studies on Ascorbic Acid.*

●Shri S. Ramanujan, Senior Research Fellow in a CSIR scheme has been awarded the Ph.D. degree by the Delhi University for his thesis, *Chemical Investigation of Indian Lichens and Heartwoods with Special Reference to Potential Therapeutic Agents* (CSIR scheme on Indian Lichens, Delhi University, Delhi).

●Shri Haridas Sarkar, Research Assistant, CSIR scheme on *Development of Electronic Wattmeters* has been awarded the Ph. D. degree by the Banaras Hindu University.

EXECUTIVE COUNCILS OF NATIONAL LABORATORIES

In accordance with the decision of the Governing Body of the CSIR, the President CSIR has reconstituted the Executive Councils of the National Laboratories for a period of 3 years with effect from April 1, 1959. The following is the list of members :

National Physical Laboratory, New Delhi—Shri A. Ramaswami Mudaliar (*Chairman*) ; Dr. H. J. Bhabha ; Dr. D. S. Kothari ; Dr. S. Bhagawantam ; Prof. S. N. Bose ; Dr. K. R. Ramanathan ; Dr. M. B. Sarwate ; Dr. B.D. Nag Chowdhury ; Dr. B.D. Kalelkar ; Dr. Lal C. Verman ; Shri S. K. Sen ; and Shri K.A.D. Naoroji (*Members*) ; Director-General, Scientific & Industrial Research ; Financial Adviser, CSIR ; and Director, NPL (*ex officio Members*).

National Chemical Laboratory, Poona—Shri P.A. Narielwala (*Chairman*) ; Shri Charat Ram ; Dr. K. A. Hamied ; Dr. B. C. Guha ; Dr. B. P. Godrej ; Dr. D. K. Banerji ; Dr. N. R. Mandlekar ; Dr. G. P. Kane ; Controller-General of Defence Production, Ministry of Defence ; Dr. Jagdish Shankar ; Representative of Indian Rubber Manufacturers' Association ; and Shri Arvind Mafatlal (*Members*) ; Director-General, Scientific & Industrial Research ; Financial Adviser, CSIR ; and Director, NCL (*ex officio Members*).

National Metallurgical Laboratory, Jamshedpur—Shri J.J. Ghandy (*Chairman*) ; Sardar Ajaib Singh ; Shri J. G. Berry ; Shri Phiroz Kutar ; Shri P. R. Kamani ; Dr. R. S. Krishnan ; Dr. Atma Ram ; Dr. Brahm Prakash ; Dr. B. D. Kalelkar ; Shri S. Boothalingam ; Director-General, Supplies and Disposals, Ministry of Works, Housing & Supply ; and Chief Controller of Research & Development, Ministry of Defence (*Members*) ; Director-General, Scientific & Industrial Research ; Financial Adviser, CSIR ; and Director, NML (*ex officio Members*).

Central Fuel Research Institute, Jealgora—Shri S.S. Khera (*Chairman*) ; Shri D.C. Driver ; Shri S.C. Ghosh ; Chairman, Coal Board ; Member (Transport), Railway Board ; Dr. A.M.N. Ghosh ; Shri M. Hayath ; Dr. G.P. Kane ; Managing Director, Singerini Collieries ; Shri J.W. Sinclair ; Director, RRL, Hyderabad ; and Director, CMRS (*Members*) ; Director-General, Scientific & Industrial Research ; Financial Adviser, CSIR; and Director, CFRI ; (*ex officio Members*).

Central Glass & Ceramic Research Institute, Calcutta—Lala Shri Ram (*Chairman*) ; Prof. P. K. Kichlu ; Shri C. P. Shah ; Shri D. N. Sen ; Lt. Col. D. N. Bhattacharya ; Shri M. G. Bhagat ; Dr. C. S. Rao ; Shri Shankarrao P. Ogale ; Dr. A. Nagaraja Rao ; Dr. B. R. Nijhawan; Development Officer (Glass & Ceramics), Ministry of Commerce & Industry ; and Representative of the Atomic Energy Establishment (*Members*) ; Director-General, Scientific & Industrial Research ; Financial Adviser, CSIR ; and Director, CGCRI (*ex officio Members*).

Central Food Technological Research Institute, Mysore—Shri B.D. Jatti (*Chairman*) ; Dr. Vikram A. Sarabhai ; Shri K. K. Birla ; Dr. B.C. Guha ; Dr. V.N. Patwardhan ; Dr. P. K. Kymal ; Shri N. R. Sathe; Shri Chinubhai Manibhai ; Dr. P. S. Sarma ; Shri N. S. Pochkhanwala ; Development Officer (Food), Ministry of Commerce & Industry ; and Dr. S. Bhagawantam (*Members*) ; Director-General, Scientific & Industrial Research ; Financial Adviser, CSIR ; and Director, CFTRI (*ex officio Members*).

Central Drug Research Institute, Lucknow—Dr. Jivraj N. Mehta (*Chairman*) ; Dr. J. C. Patel ; Dr. K. A. Hamied ; Dr. R. N. Chowdhury ; Dr. A.H. Amin ; Dr. B. C. Bose ; Maj. Gen. S. L. Bhatia ; Dr. I. C. Chopra ; Shri P. M. Nabar; Dean, Faculty of Medicine, Lucknow University ; Director, Indian Council of Medical Research; and Director, IIBEM (*Members*) ; Director-General, Scientific & Industrial Research ; Financial Adviser, CSIR ; and Director, CDRI (*ex officio Members*).

Central Electro-chemical Research Institute, Karaikudi—Shri C. Subramanian (*Chairman*) ; Shri Madhav B. Bhagwat ; Shri S. Ramaswami ; Dr. S. K. Bhattacharya ; Dr. K. L. Ramaswami ; Dr. Jagdish Shankar ; Controller-General of Defence Production, Ministry of Defence ; Dr. S. Bhagawantam ; Director, NML ; Prof. of Applied Chemistry, Indian Institute of Technology, Bombay ; Shri Bishambar Das Kapur ; and Shri M. L. Seth (*Members*) ; Director-General, Scientific & Industrial Research ; Financial Adviser, CSIR ; and Director, CECRI (*ex officio Members*).

Central Leather Research Institute, Madras—Dr. A. Lakshmanaswami Mudaliar (*Chairman*) ; Shri P. R. Sondhi ; Shri S. P. Pandit ; Dr. T. R. Govindachari ; Shri Moni Banerji ; Shri Sanjoy Sen ; Representative of the Tanners Federation of India ; Representative of Leather Goods Manufacturers' Association, Bombay ; Development Commissioner, Small Scale Industries, Ministry of Commerce & Industry ; Development Officer (Leather), Ministry of Commerce & Industry ; representative of the South India Hides & Skins Merchants and Dealers Association, Madras ; and Janab M. J. Jamal Moideen Sahib (*Members*) ; Director-General, Scientific & Industrial Research ; Financial Adviser, CSIR ; and Director, CLRI (*ex officio Members*).

Central Building Research Institute, Roorkee—Shri N. Dandekar (*Chairman*) ; Shri A. N. Khosla ; Dr. R. P. Mitra ; Shri Viswanath Prasad ; Shri Inderjit Singh ; Representative of the Ministry of Community Development ; Director, National Buildings Organisation ; Engineer-in-Chief, Army Headquarters ; Chief Engineer (Buildings), West Bengal ; Chief Engineer (Buildings), Madras ; Chief Engineer (Buildings), Punjab ; and Director, CRRI (*Members*) ; Director-General, Scientific & Industrial Research ; Financial Adviser, CSIR ; and Director, CBRI (*ex officio Members*).

Central Road Research Institutes, New Delhi—Prof. M. S. Thacker (*Chairman*) ; Shri Sujan Singh ; Brig. S. K. Bose ; Shri H. P. Sinha ; Chief Engineer (Bldg. & Road), Kashmir ; Chief Engineer (Bldg. & Road), Mysore ; Chief Engineer (Bldg. & Road), Bihar ; Chief Engineer (Bldg. & Road), Madhya Pradesh ; Representative of the Ministry of Community Development ; President, Indian Roads Congress ; Director, CBRI ; Shri Bharat Ram ; and

(*Contd. on p. 4, col. 2*)

RESEARCH IN PROGRESS

National Laboratories

National Metallurgical Laboratory, Jamshedpur

Up-grading of Manganese Ore—Beneficiation tests on low grade manganese ore from Jhabua, Madhya Pradesh (assaying Mn, 28.8; SiO_2, 22.38; Al_2O_3, 2.37; Fe, 5.9; P, 0.19; Ca0, 10.73; and BaO, 2.45 per cent), have been carried out. Of the various methods employed, a combined process employing jigging, tabling and reduction roast treatment of the gravity concentrate followed by wet magnetic separation yielded a manganese concentrate assaying Mn, 48.89; Fe, 5.6; and SiO_2, 12.12 per cent with a manganese recovery of 57.7 per cent. High intensity magnetic separation followed by reduction roast and magnetic separation gave a concentrate assaying Mn, 47; Fe, 5.3; and SiO_2, 11.9 per cent with a recovery of 59.7 per cent. This concentrate can be employed for the production of standard-grade ferromanganese after blending with ores of slightly lower phosphorus content.

Flux for Union Melt Welding—Three different compositions of flux for union melt welding (*CSIR News*, Vol. 8, No. 20, p. 3) have been prepared in larger batches and put to practical trials in a local factory. The joints welded employing the flux possess satisfactory tensile and bend strength. X-ray examination of the welded joint did not reveal any porosity, blow hole or entrapped gases.

Central Drug Research Institute, Lucknow

Oral Contraceptives—The use of aldosterone as an oral contraceptive has been studied on rats as experimental animals. The drug is twice as active as DOCA (Desoxy Corticosterone acetate) in inhibiting testicular development in young rats and arresting spermatogenesis at primary spermatocyte stage.

Peruvoside—Studies on the cardiac pharmacology of the glycoside, peruvoside (isolated from *Thevetia neriifolia* by S. Rangaswami, Andhra University, Waltair under a CSIR research scheme), have shown that besides being quick and short acting, it has safety margin similar to other cardiac glycosides but has relatively less cumulative toxicity.

Central Electrochemical Research Institute, Karaikudi

Calibration of Wavelength Scale of Spectrophotometer—Further work on the calibration of spectrophotometers based on 'null principle' using isobestic points of indicators (*CSIR News*, Vol. 8, No. 12, p. 3) has resulted in the development of a cheap and efficient method. In this method, a filter pair consisting of two differently coloured ordinary glass sheets serves as a wave-length standard instead of indicators—INDRA SANGHI & N.V. PARTHASARATHY.

Electropolishing in Hull and Hyperbolic Cells—The cause of development of various bands of different reflectivity and degree of polishing on the inclined anode plate in Hull and Hyperbolic cells during electro polishing has not been known so far.

Investigations carried out at the Institute involving measurement of actual potential and current density distribution with specially designed probe electrodes along the plate (as existing during polarisation) have shown that due to polarisation and the varying nature of the anodic layers, the current distribution is not uniformly varying. The size and position of these bands is a function of time and the two high current density regions are separated by a low current density region—INDRA SANGHI & V.R. RAMANATHAN.

Sponsored Research

Bioflavonoids of Food-stuffs—Systematic investigations undertaken for the availability of bioflavonoids in foodstuffs have shown their presence in a large number of vegetables and fruits. Quercetin glycoside (about 500 p.p.m.) has been isolated from eight leafy vegetables, which have also been found to contain vitamin K (about 200-250 p.p.m.)

Studies on the role of flavonoids in the biosynthesis of ascorbic acid in animal tissues have shown that the presence of quercetin in diet enhances the tissue synthesis of ascorbic acid and growth in albino rat. Addition of quercetin with traces of ascorbic acid to guinea-pigs fed scorbutogenic diet has delayed the appearance of scorbutic symptoms and prolonged the life of guinea-pigs—DR. (MISS) B. PURI, Lady Irwin College, New Delhi.

RESEARCH PAPERS

BEHAVIOUR OF MONOVALENT IMPURITIES INCORPORATED IN ALKALI HALIDES—A.K. Das Gupta & K.P. Sinha, NCL, Poona. *Naturwissenschaften,* **23** (1958), 567-68.

STRUCTURE OF ELECTRODEPOSITED NICKEL—B C. Banerji & A. Goswami, NCL, Poona. *J. electrochem. Soc.*, **106** (1959), 20-23.

MODERN THEORIES OF PASSIVATION OF METALS—Indra Sanghi, CECRI, Karaikudi. *J. Instn Chem.* (*India*), **30** (1958), 299-304.

ELECTROCHEMICAL BEHAVIOUR OF ZINC : PART II—CONSTANT OVERVOLTAGE MEASUREMENT—Indra Sanghi & M. Fleischmann, CECRI, Karaikudi. *Proc. Indian Acad. Sci.*, **49A** (1959), 6-24.

A SIMPLE PROBE-ELECTRODE FOR COMPARATIVE STUDY OF CURRENT DISTRIBUTION AT SURFACES—Indra Sanghi & V.R. Ramanathan, CECRI, Karaikudi. *Curr Sci.*, **28** (1959), 23.

SOME POLISHING EXPERIMENTS ON COPPER IN A HYPERBOLIC CELL—Indra Sanghi & V.R. Ramanathan, CECRI, Karaikudi. *Proc. Indian Acad. Sci.*, **48A** (1958), 284-87.

POLAROGRAPHIC REDUCTION OF HEXAVALENT URANIUM IN SODIUM TRIPOLYPHOSPHATE : PART II— ESTIMATION OF URANIUM—P.R. Subbaraman, N.R. Joshi & J. Gupta, NCL, Poona. *Analyt. chim. acta*, **20** (1959), 190-94.

THE PURIFICATION OF HYDROGENASE OF DESULPHOVIBRIO DESULFURICANS—J.C. Sadana & A.V. Morey, NCL, Poona. *Biochim. biophys. Acta*, **32** (1959), 592.

HYDROGEN ION EQUILIBRIA AND THE INTERACTION OF Cu (II) AND Co (II) WITH BOVINE SERUM ALBUMIN—Hiralal, NCL, Poona. *J. Amer. chem. Soc.*, **81** (1959), 894.

WEATHERING STUDIES ON HOUSE PAINTS—G.W. Kapse & N.K. Patwardhan, CBRI, Roorkee. *Paintindia*, **8** (12) (1959), 30-32.

In Parliament

May 4, 1959—Dr. M.M. Das, Union Deputy Minister of Scientific Research & Cultural Affairs, replying to a question by Shri Ram Krishan Gupta, informed the Lok Sabha that the Governing Body of the CSIR at its meeting held on March 31, 1959 had recommended the constitution a *Petroleum Council* on the analogy of the Coal Council for the rapid development of petroleum industry in the country. The Council would examine the following matters:

(1) Training of personnel; research and investigations; documentation and information; and marketing and economics in the field of petroleum and natural gas.

(2) The facilities available in the existing and proposed institutions and the potential for expansion of such facilities.

(3) Additional facilities including any new institution that should be created.

May 4, 1959—In reply to a question in Lok Sabha by Shri Harish Chandra Mathur, Dr. M.M. Das, Union Deputy Minister of Scientific Research & Cultural Affairs, referred to the following steps taken by the Council to bring about liaison and coordination between scientific research and industry: (1) Appointment of Industrial Liaison Officers and Regional Liaison Officers; (2) Publication of Scientific journals and special literature; (3) Extension services; (4) Demonstration of processes developed in the national laboratories; (5) holding of symposia on subjects of industrial interest; (6) representation of industrialists on the Executive Councils of National Laboratories; and (7) constitution of a Joint Standing Committee for scientific research and industry.

Replying to another part of the question regarding the contribution made to industry during 1957-58, Dr. Das, mentioned the following processes (developed by national laboratories) which have resulted in establishing new industries in the country: (1) Mica Insulating Bricks; (2) Nicotine Sulphate for use as insecticide; and (3) Composite Protein Food.

PATENTS & PROCESSES

Applications Filed

67468: *Improvements in or relating to the preparation and isolation of isonicotinic and nicotinic acids from the* beta-picoline *cut*—A. Lahiri, H.S. Rao, A.R. Panicker & G.N. Kulsrestha, CFRI, Jealgora.

67476: *A process for the conversion of coal, lignite and allied materials into smokeless fuel*—S.S. Choudhury, B.K. Mazumdar & S.K. Chakrabartty, CFRI, Jealgora.

67470: *Improvements in or relating to machines for making adhesive tapes and the like materials*—S.L. Kapur & B.R. Rao, NCL, Poona.

67568: *A process for the solubilization of water insoluble furocoumarins*—J. Misra & B. Mukerji, CDRI, Lucknow.

Applications Accepted

60864: *Improvements relating to the electrolytic preparation of salicylaldehyde*—H.V.K. Udupa & B.B. Dey, CECRI, Karaikudi.

61978: *New stainless steels and methods of preparing them*—B.R. Nijhawan, P. K. Gupte, S. S. Bhatnagar & B. K. Guha, NML, Jamshedpur.

62292: *Electrowinning of zinc and recovery of elemental sulphur from zinc sulphide ores*—V. Aravamuthan & R. Srinivasan, CECRI, Karaikudi.

63659: *An improved vacuum tester for canned foods*— J.S. Pruthi, Girdhari Lal & S. K. Lakshminarayana, CFTRI, Mysore.

(*Contd. from p. 2, col. 3*)

Shri R. G. Saraiya (*Members*); Financial Adviser, CSIR; and Director, CRRI (*ex officio Members*).

National Botanic Gardens, Lucknow—Dr. Sampurnanand (*Chairman*); Dr. J. C. Sen Gupta; Dr. K. A; Chowdhury; Shri M. B. Raizada. Shri George Thomas; Dr. J. Venkateswarulu; Dr. K. Biswas; Shri Sri Ranjan; Shri P. M. Nabar; Prof. P. Maheshwari; Shri H. Sitarama Reddy; and Director of Agriculture, Uttar Pradesh (*Members*); Director-General, Scientific & Industrial Research; Financial Adviser, CSIR; and Director, NBG (*ex officio Members*).

Regional Research Laboratory, Hyderabad—Shri N. Sanjiva Reddy (*Chairman*); Prof. T.R. Seshadri; Shri Charat Ram; Dr. A. Lahiri; Dr. K. Venkataraman; Shri V. Ramakrishna; Shri Anil De; Shri Syed Kazim; Shri D.S. Reddy; Shri C.V.D. Murthy; and Shri R. Prasad (*Members*); Director-General, Scientific & Industrial Research; Financial Adviser, CSIR; and Director, RRL, Hyderabad (*ex officio Members*).

Indian Institute for Biochemistry & Experimental Medicine, Calcutta—Dr. B.C. Roy (*Chairman*); Dr. B.C. Guha; Maj. Gen. S.L. Bhatia; Dr. R.M. Kasliwal; Dr. M.J. Thirumulachar; Col. S.S. Bhatnagar; Dr. M.N. Lahiri; Dr. H.R. Cama; Dr. P.K. Bose; Dr. B. Mukerji; Dr. B.B. Dikshit; and Director, Haffkine Institute (*Members*); Director-General, Scientific & Industrial Research; Financial Adviser, CSIR; and Director, IIBEM (*ex officio Members*).

Central Mining Research Station, Dhanbad—Chairman, Coal Board (*Chairman*); Shri S.S. Grewal; Shri A.B. Guha; Dr. H.R. Dewan; Shri S. Mukerji; Shri B.H. Engineer; Dr. A. Lahiri; Shri F.C. Badhwar; Prof. Daya Swarup; Dr. A.N. Ghosh (*Members*); Director-General, Scientific & Industrial Research; Financial Adviser, CSIR; and Director, CMRS (*ex officio Members*).

Central Electronics Engineering Research Institute, Pilani—Shri M.P. Birla (*Chairman*); Dr. M.B. Sarwate; Prof. K. Sreenivasan; Dr. J.N. Bhar; Shri B.V. Baliga; technical representative of the Radio Manufacturers' Association, Calcutta; Shri Y.A. Fazalbhoy; Chief Engineer, All India Radio; Chief Controller of Research & Development, Ministry of Defence; Dr. K.S. Krishnan; Dr. D.Y. Phadke; and Prof. S.V. Chandrasekhara Aiya (*Members*); Director-General, Scientific & Industrial Research; Financial Adviser, CSIR; and Director, CEERI (*ex officio Members*).

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CSIR NEWS

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LIBRARY MYSORE

Regional Research Laboratory for Assam to be established at Jorhat

The Council of Scientific & Industrial Research has decided to establish a Regional Research Laboratory for Assam at Jorhat. The function of this Laboratory will be to undertake research on industrial raw materials available in the State and to help in the development of new industries in the region.

Scientists' Pool

The Committee for administering the Pool of Trained Scientists (*CSIR News*, Vol. 8, No. 20, p. 1) has, on the advice of the Union Public Service Commission, selected 123 persons for temporary placement, pending their absorption on a more or less permanent basis. Arrangements are being made to attach or second these persons to government departments, State undertakings, National Laboratories, Universities, Scientific and Technical Institutions including those in the private sector.

PERSONAL

- **Dr. C. Narayanan** has been appointed Senior Scientific Officer : Gr. II, NCL, Poona, with effect from May 8, 1959.
- **Dr. L.D. Kapoor** has been appointed, on promotion, Senior Scientific Officer : Grade II, RRL, Jammu and Kashmir, with effect from May 23, 1959.
- **Dr. P.M. Nair** has been appointed Junior Scientific Officer, NCL, Poona, with effect from May 8, 1959.
- **Sarvashri S.P. Gujral & D.P. Gupta** have been appointed Junior Technical Officers, National Register Unit, with effect from May 7 & May 18, 1959.
- **Shri D.N. Krishna Rao**, Garden Overseer, CSIR Secretariat, has been appointed, on promotion, Junior Scientific Officer, NBG, Lucknow, with effect from May 19, 1959.
- **Sarvashri S.N. Sobti & B.K. Abrol** have been appointed, on promotion, Junior Scientific Officers, RRL, Jammu and Kashmir, with effect from May 23, 1959.
- **Shri M.V. Pant** has been appointed Junior Scientific Officer, RRL, Jammu and Kashmir, with effect from May 23, 1959.

* * *

- **Dr. J.C. Ray**, Director, IIBEM, Calcutta, left for Europe on May 22, 1959 on a tour to study developments in the construction, internal lay-out and organisation of laboratories for biological research. Dr. Ray will visit France as a guest of the French Government under the Indo-French Economic and Technical Cooperation Agreement and laboratories in Great Britain, Sweden, Denmark and Germany.
- **Prof. K.N. Kaul**, Director, NBG, Lucknow left for U.K. on May 28, 1959 to attend the Bi-Centenary Celebrations of the Kew Gardens, London. He will work at the Kew Gardens Herbarium and later attend the International Botanic Congress at Montreal, Canada.

Dr. R.V. Sitholey, Asst. Director, NBG, Lucknow will look after the duties of the Director until **Prof. K.N. Kaul** returns to India.

Dr. L.A. Ramdas

The Indian National Commission for Cooperation with UNESCO has nominated Dr. L.A. Ramdas, Asst. Director, NPL, New Delhi, as a member of the *Advisory Committee on Arid Zone Research*. Dr. Ramdas has accepted the membership.

Dr. Ramdas participated in the 14th session of the *Committee* held at Tehran in October 1958.

Dr. P. Nilakantan

Dr. P. Nilakantan, formerly Director of Technical Development & Production (Air), has been appointed Director, National Aeronautical Research Laboratory, with effect from June 1, 1959.

Dr. Nilakantan (*b*. April 19, 1910 at Nagercoil, near Cape Comorin) had a distinguished academic record at the Banaras Hindu University where he obtained the M.Sc (Physics) degree in 1935 standing first in the First Class and was awarded the Chancellor's Gold Medal. He then joined the Indian Institute of Science, Bangalore. He was awarded the D.Sc. degree of the Madras University for his thesis on 'Magnetism'. He then proceeded to U.S.A. where he specialised in Aeronautical Engineering at the California Institute of Technology (1941-43), and obtained the M.S. (Aero. Engng) degree in 1942. He served as Chief of Vibration and Flutter Analysis at Hughes Aircraft Co., California during 1943-44. In 1944, he joined the Civil Aviation Department of the Government of India and organised the Research & Development Directorate. He set up the Technical Research Centre and initiated work on the design and construction of gliders from indigenous materials.

Dr. Nilakantan has been intimately associated with practically all aircraft design and development activities of the Hindustan Aircraft Ltd., Bangalore, since 1948. During the last few years, he has been organising the Directorate of Technical Development & Production (Air), Ministry of Defence, and has completed successfully a number of important Air Force development and production projects.

As convener of the CSIR Wind Power Project, he directed attention

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NEW RESEARCH SCHEMES SANCTIONED

On the recommendation of its Advisory Board, the Governing Body of the Council have sanctioned the following new research schemes.

CHEMICAL RESEARCH COMMITTEE

1. *A Friedel-Craft's succinoylation of chloro-alkyl-naphthalenes : A new synthesis of Diel's hydrocarbon*—Dr. Azizur Rehman, Muslim University, Aligarh.

2. *Chemical constitution of the pigments of insoluble red-woods : santalin and santarubin*—Prof. A. C. Jain, Delhi University, Delhi.

3. *Biochemical studies on the synthesis of pyrimidine derivatives and nucleic acid antagonists*—Prof. B. C. Guha, University College of Science & Technology, Calcutta.

4. *Search for new organic pesticides*—Dr. K. C. Joshi, Gorakhpur University, Gorakhpur.

5. *Investigation on hydro-chrysofluorene ring system*—Dr. B. K. Bhattacharyya, Jadavpur University, Calcutta.

6. *Studies in the cyclo-octane series*—Dr. G. S. Saharia, Delhi University, Delhi.

7. *Chemistry of Indian plant resins*—Prof. P. K. Bose, Bose Institute, Calcutta.

8. *Organic derivatives of silicon and derivatives of boron, aluminium and germanium with silanols*—Prof. R. C. Mehrotra, Gorakhpur University, Gorakhpur.

9. *Bio-synthesis and metabolism of gibberelic acid*—Dr. S. P. Sen, Bose Institute, Calcutta.

10. *Bio-chemical and chemotherapeutic studies in experimental malaria*—Dr. T. Ramakrishnan & Dr. M. Sirsi, Indian Institute of Science, Bangalore.

11. *Study of bacterial production of sulphur from sulphates using cheap source of hydrogen donors*—Dr. T. K. Ghose, Jadavpur University, Calcutta.

12. *Mechanism of development of heat resistance of bacterial spores*—Dr. A. N. Bose, College of Engineering & Technology, Calcutta.

13. *Investigations on photo-chemical reactions ; Resonance energy transfer between fluorescent molecules in condensed systems*—Dr. (Miss) K. K. Rohtagi, Jadavpur University, Calcutta.

14. *Role of solvent, temperature, steric and electronic factors in Dieckmann cyclisation*—Dr. Jadugopal Dutta, Jadavpur University, Calcutta.

15. *Application of vapour phase chromatography in the analysis of Indian natural oils and the essential oils present in Indian tea and studies on the possibilities of using this technique as a preparation tool*—Dr. D. M. Bose, Bose Institute, Calcutta.

16. *Colloid research unit*—Prof. B. N. Ghosh, University College of Science & Technology, Calcutta.

17. *Study of Indian gums*—Dr. S. N. Mukherjee, Jadavpur University, Calcutta.

18. *Electric dipole moment and interaction of solute and solvent*—Dr. Balkrishna, Allahabad University, Allahabad.

19. *Oxidation of organic compounds by trivalent manganese*—Prof. S. Ghosh, Allahabad University, Allahabad.

20. *Synthetic investigation in polycyclic systems related to diterpenoids, steroids and triterpenoids*—Shri Nasipuri, University College of Science & Technology, Calcutta.

21. *Metabolic disorders in brain in vitamin deficiencies*—Dr. J. J. Ghosh, Calcutta University, Calcutta.

22. *Development of polyesters suitable for moulding, etc. & Development of polyurethanes for foams, rubbers, adhesives, coatings and fibres*—Shri R. T. Thampy, Shri Ram Institute for Industrial Research, Delhi.

23. *Preparation of plasticizer and stabilisers for polyvinyl chloride resins from vegetable oil fatty acids*—Shri R. K. Bhatnagar, Shri Ram Institute for Industrial Research, Delhi.

24. *Studies in hemagglutinins in Indian plants*—Dr. (Mrs.) Kamala Sohonie, Institute of Science, Bombay.

25. *Co-factors in protein biosynthesis*—Shri R. Wagle, Institute of Science, Bombay.

26. *Theory of strong electrolytes*—Dr. S. N. Bagchi, Calcutta University, Calcutta.

ESSENTIAL OILS RESEARCH COMMITTEE

27. *Constitution of the constituents of the essential oils from the buds of* surangi—Dr. V. O. Kulkarni, J. S. S. College, Dharwar.

PHYSICAL RESEARCH COMMITTEE

28. *Variation of ultrasonic velocities in Indian rocks at low pressures*—Dr. S. Balakrishna, Osmania University, Hyderabad.

29. *Collection of data of lightning flashes using calibrated ceraunometers*—Dr. M.W. Chiplonkar, University of Poona, Poona.

30, *Breakdown studies in a microwave gas discharge plasma and other collision processes in gases and solids*—Dr. M.P. Madan, Lucknow University, Lucknow.

31. *Construction and setting of concave grating vacuum spectrograph for investigations in the soft X-ray region*—Dr. B.K. Agarwal, Allahabad University, Allahabad.

32. *Spectroscopic studies in infra-red region*—Dr. N.L. Singh, Banaras Hindu University, Varanasi.

33. *Studies of dislocations in relation to some structure sensitive characteristics of crystals (metals alloys)*—Dr. P.G. Deo, Panjab University, Chandigarh.

34. *Absorption, emission and fluorescence spectra of quinones*—Dr. R.S. Singh, Banaras Hindu University, Varanasi.

35. *Infra-red spectroscopy of polyatomic molecules and biological materials*—Dr. V. Ramakrishna Rao, Andhra University, Waltair.

36. *Study of organic and inorganic flames*—Dr. B.B. Laud, Poona University, Poona.

37. *Construction of a structure factor computor and a vector shift analyser for X-ray crystallographic calculation*—Dr. R. S. Krishnan, Indian Institute of Science, Bangalore.

38. *Techniques for the accurate measurement of intensities in X-ray crystallography*—Dr. G.N. Ramachandran & Dr. K.S. Chandrasekharan, University of Madras, Madras.

39. *Infra-red and optical studies on protein fibres*—Dr. G.N. Ramachandran, University of Madras, Madras.

40. *Studies on mutual diffusion of gases by radioactive tracer technique*—Prof. B.N. Srivastava, Indian Association for the Cultivation of Science, Calcutta.

41. *Magnetic resonance spectra for protons and for deuterium and nitrogen atoms using a super high*

(*Contd. on p. 4, col. 1*)

RESEARCH IN PROGRESS

National Laboratories

Central Fuel Research Institute, Jealgora

Evaluation of Cambay Crudes—A sample of crude oil from the newly discovered Cambay Oil-field has been examined 'as received' and after dehydration by the usual IP distillation at atmospheric and reduced pressures. The various fractions have also been examined for their characteristics such as correlation index, viscosity-gravity constant, etc. and by the Lane & Garton's key fraction method.

The tests indicate that the Cambay crude is more paraffinic in nature than the Naharkotiya crude—A.N. Basu, I.B. Gulati, I. Chandra & G. Paul.

Regional Research Laboratory, Jammu

Experimental Cultivation of Mint—*Mentha arvensis* L. subsp. *haplocalyx* Briquet var. *piperascens* Holmes, which is the commercial source of menthol, has been introduced and cultivated experimentally. The fresh leaves yield 0.40-0.50 per cent of oil containing 60–70 per cent of menthol (yield of menthol/acre, 30 lb.). The Kashmir Government has established a 1,200 acre farm for cultivation of this plant.

Central Building Research Institute, Roorkee

Reverberation Chamber—A chamber for experimental determination of acoustic absorption and transmission characteristics of prototype buildings and partition panels has been constructed.

It consists of a main chamber (20 ft. × 18 ft. × 12 ft.), for absorption coefficient measurements and an adjoining smaller chamber (11½ ft. × 9⅔ ft. × 12 ft.) with the side walls in part converging towards the opening on the common side between the chambers. The walls of the chambers are 1 ft. 1½ in. thick, built with brick in cement mortar (1 : 6), and plastered on the outside. The roof is a conventional RC slab, 8 in. thick.

Lenticular diffusers are provided on the walls and the roof of the bigger chamber whereas the smaller chamber has lenticular diffusers on the roof and semi-cylindrical diffusers on the walls. The different diffusers ensure efficient diffusion of sound energy in the chambers.

Preliminary experiments have shown that intensity distribution has a reasonable degree of uniformity. The reverberation time of about 7 seconds compares favourably with that in reverberation chambers in foreign countries.

Sponsored Research

(Completed Scheme)

Essential Oil of *Canarium euphallum* Resin—The essential oil from this resin, available from the Andamans, has been prepared by distillation in a yield of 2.1–2.3 per cent. Its physico-chemical properties have been recorded. On testing by the agar-cup method, the oil has been found to possess antibiotic properties against *Proteus vulgaris*; *Staphylococcus aureus* (Resistant type); *Eberthella typhosa*; *Aspergillus niger*; and *Alternaria solani*.

Besides, the residue obtained by evaporation of the resin solution in polar solvents, possesses good fixative properties and may replace gum benzoin. An amorphous compounds probably unsaturated, having a m.p. 183°C. has been obtained by ether extraction of the resin, precipitation with polar solvents and chromatographic purification—A. N. Saha & S. K. Das, Calcutta University, Calcutta (Sept. 1, 1957 to Feb. 28, 1959).

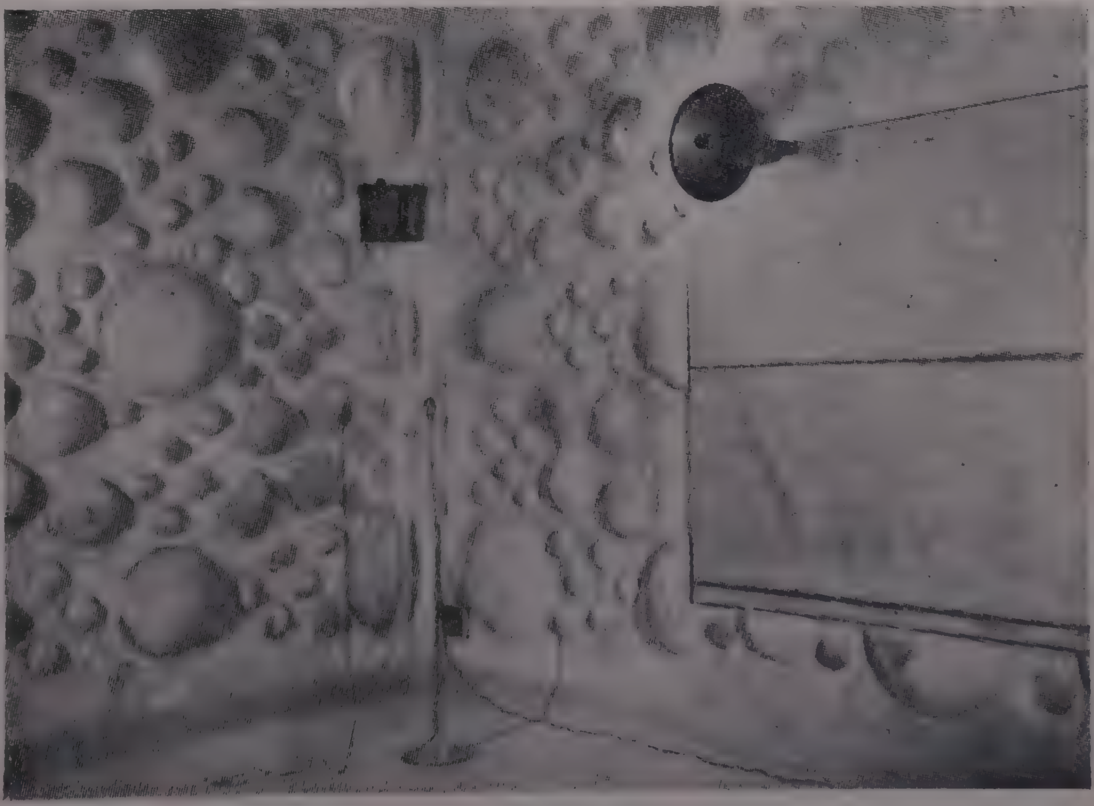
RESEARCH PAPERS

ION EXCHANGE SEPARATION OF LIGHT RARE EARTHS USING SODIUM TRIPOLYPHOSPHATE—P. R. Subbaraman & K. S. Rajan, NCL, Poona. *Curr. Sci.*, **28** (1959), 63-64.

ANTIBACTERIAL PROPERTIES OF PERISTROPHE BICALYCULATA—I. C. Chopra & C. L. Chopra, RRL, Jammu. *Indian J. med. Res.*, **47** (1959), 161-63.

SOLUBILITIES OF VEGETABLE OILS IN AQUEOUS ETHANOLS AND ETHANOL-HEXANE MIXTURE—K. Ramalingam & K. S. Chari, RRL, Hyderabad. *J. Amer. Oil Chem. Soc.*, 36 (1959), 77-80.

LABORATORY INVESTIGATIONS ON THE EXTRACTION OF OIL FROM VEGETABLE OIL CAKES WITH ETHANOL—K. Ramalingam & K.S. Chari, RRL, Hyderabad. *J. Amer. Oil Chem. Soc.*, **36** (1959), 81-83.



CBRI, ROORKEE—Reverberation chamber for the determination of acoustic absorption and transmission characteristics of prototype buildings and partition panels.

Burmah Shell & Assam Oil Co. Scholarships

The following persons have been selected for the award of scholarships for research and training in the subjects noted against their names.

BURMAH SHELL

1. Shri K. C. Varshney—*Petroleum Technoloy*
2. Shri S. P. Puti—*Mining Engineering*
3. Shri S. A. Arunachalam—*Fuel Technology*

ASSAM OIL COMPANY

1. Shri V. B. V. Rajan—*Petroleum Technology*
2. Shri T. Guha—*Petroleum Technology*
3. Shri P. N. Nayak—*Petroleum Geology and Geophysics*
4. Shri R. V. Gopalakrishna—*Fuel Technology*
5. Shri V. D. Sahgal—*Foundry Practice*
6. Shri M. N. Srinivasan—*Foundry Practice*
7. Shri P. K. Chakravorty—*Mining Engineering*

(*Contd. from page 2, col. 3*)

resolution N.M.R. spectrometer—Dr. P. Venkateswarlu, Aligarh University, Aligarh.

42. *Applications of gaseous electronics for the determination of atomic reaction rates*—Dr. S.P. Ghosh, Allahabad University, Allahabad.

43. *Synthetic optical crystals*—Dr. P.K. Kichlu, University of Delhi, Delhi.

(*Contd. from page 1, col. 3*)

to research on wind-mills, as a result of which wind-mills adopted for Indian conditions have been designed and constructed using indigenous materials.

Dr. Nilakantan is the author of a number of research papers and reports on magnetism, X-rays, aerodynamics, flutter & vibration, and aviation. He is a Fellow of the Indian Academy of Sciences; Fellow of the Institute of Physics, London ; Fellow of the Aeronautical Society of India ; and Associate Fellow of the Institute of Aeronautical Sciences, U.S.A. He is the Founder-Secretary of the Aeronautical Society of India and of the Delhi Gliding Club.

PATENTS & PROCESSES

Applications Filed

67262 : *Production of anion-exchange material from coal*—J. N. Bhowmik, P. N. Mukherjee & A. Lahiri, CFRI, Jealgora.

67461 : *Process for the manufacture of carnallite from sea bittern*—K. Seshadri, G. D. Bhatt & C. J. Dave, CSRI, Bhavnagar.

67636 : *An improved process relating to thermal polymerization of unsaturated fatty acids*—B. G. Sharma & R. K. Bhatnagar, Shri Ram Institute for Industrial Research, Delhi.

67664 : *Separation of soluble silica from alkaline solution*—A. V. R. Rao, D. S. Datar & S. H. Zaheer, RRL, Hyderabad.

67665 : *Improvements in or relating to the electrolysis of sodium sulphate solutions for the production of caustic soda and sulphuric acid*—V. Aravamuthan & P. S. Desikan, CECRI, Karaikudi.

67779 : *A process for briquetting of non-caking coal slacks and carbonisation of briquettes to produce a strong coke*—S. H. Zaheer, D. P. Agrawal, D. K. Rao & M. G. Krishna, RRL, Hyderabad.

Applications Accepted

61484 : *Improvements in or relating to the refining and utilisation of cottonseed oil*—T. R. Seshadri & Kailash Chander, Delhi University Delhi.

62262 : *Improvements in or relating to the detoxification of cottonseed products such as cottonseed meal or cottonseed flour*—T. R. Seshadri & Kailash Chander, Delhi University, Delhi.

62293 : *Electrowinning of zinc by electrolysis of zinc chloride solutions*—V. Aravamuthan & R. Srinivasan, CECRI, Karaikudi.

62426 : *A process for the oxidation of toluene to benzaldehyde*—H. V. K. Udupa, M. S. Venkatachalapathi & R. Ramaswamy, CECRI, Karaikudi.

62490 : *A process for making cable ducts for post tensioned prestressed concrete structures*—S.K. Narayana & S. M. K. Chetty, CBRI, Roorkee.

Process Leased Out

The process *Resins from Tar Oil Fraction* (Patent No. 56581) developed at the Central Fuel Research Institute, Jealgora, has been leased out for commercial exploitation to the following firms :

1. M/s. *Shalimar Rope Works Ltd.*, Calcutta ; 2. M/s. *Plywood and Timber Products (Private) Ltd.* Cannanore, and 3. M/s. *Kasipur Plywood Co.*, Calcutta.

Regional Research Laboratory, Jammu-Tawi

Rooted suckers of JAPANESE MINT (*Mentha arvensis*) and ENGLISH DILL (*Anethum graveolens*) are available from fresh harvest for commercial cultivation.

For particulars, instructions for cultivation, and prices, please contact :

Officer-in-charge,
Regional Research Laboratory,
Jammu-Tawi.

Printed at Asia Press, Delhi-7, and Published by the Council of Scientific & Industrial Research, Old Mill Road, New Delhi-1.

CSIR NEWS

VOL. 9 NEW DELHI — JUNE 27, 1959 : ASADHA 6, 1881 NO. 12

MEETINGS & SYMPOSIA

A meeting of the *Standing Committee for Retired Research Scientists* will be held at North Block, Central Secretariat, New Delhi on June 29, 1959 at 11.00 a.m.

A meeting of the *Aeronautical Research Committee* will be held at the CSIR Secretariat, New Delhi on July 25, 1959 at 3.00 p.m.

SYMPOSIUM

A symposium on *Amoebiasis and other Infections in India and its Therapy* is proposed to be held in the Central Drug Research Institute, Lucknow, in Nov. 1959.

The scope of the Symposium will be as follows :

1. *Incidence and Epidemiology*

   Morphology—Diagnostic procedures—Influence of other helminthic, protozoal and bacterial associates—Host-parasite relationship.

2. *Experimental Amoebiasis & Screening*

   In vitro techniques—*In vivo* tests in guinea-pigs, mice and monkeys; Culture media and cholesterol needs—Nutritional requirement & metabolic pattern.

3. *Chemotherapy*

   Chemical constitution & biological activity—Plant products—Synthetic drugs—Antibiotics.

4. *Clinical Study*

   Intestinal amoebiasis and Giardiasis—Systemic amoebiasis Complications.

Those who wish to contribute papers and participate in the symposium are requested to send an abstract (in duplicate) of the paper not exceeding 250 words, before **Sept. 15, 1959** and the full paper (in duplicate) before **Oct. 15, 1959**, to the Director, Central Drug Research Institute, Lucknow.

Dr. Bhabha Honoured

The honorary degree of Doctor of Science was conferred on Dr. Homi J. Bhabha, F.R.S., Secretary, Department of Atomic Energy, Government of India and Member, Governing Body, CSIR, by the Cambridge University on June 11, 1959 on the occasion of 'May Week' ceremony.

PERSONAL

- The Vice-President, CSIR, has been pleased to create a post of Special Officer to handle the work of the Third Five-Year Plan in the CSIR Secretariat. Shri L. Ramanathan, Section Officer :Grade III has been appointed to this post with effect from June 23 1959.

- Shri P. N. Mehrotra, Senior Scientific Officer, Metals Research Committee relinquished charge of his post with effect from June 1, 1959.

- Shri V. T. Shewale, Junior Scientific Officer, CBRI, Roorkee, relinquished charge of his post with effect from June 1, 1959.

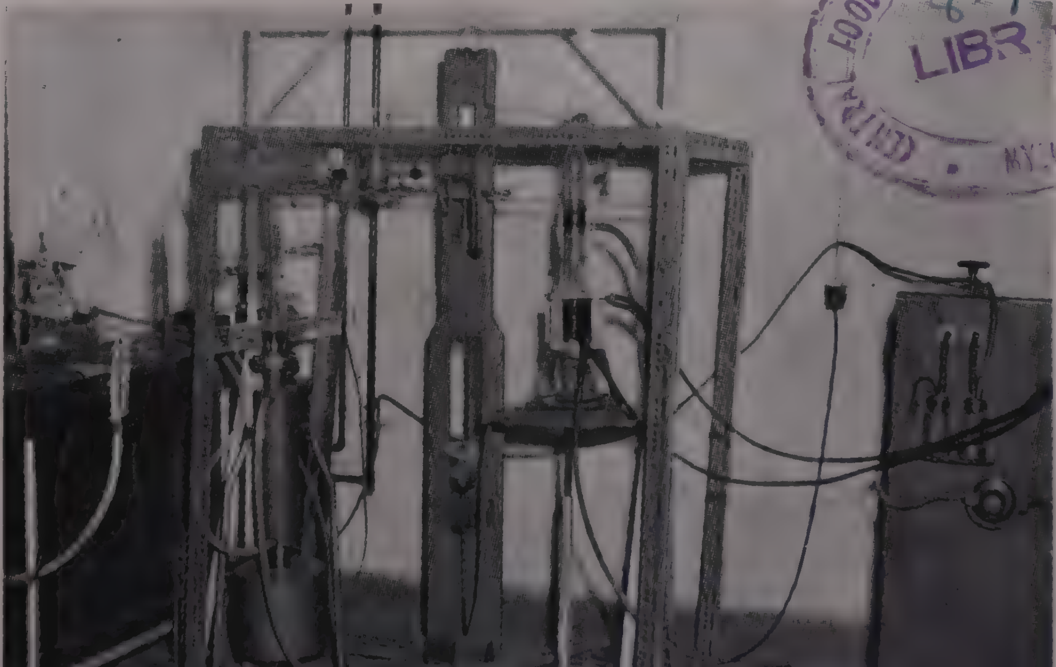
- Shri A. N. Kapoor, Senior Scientific Officer, NML, Jamshedpur, on deputation to U.K. under the Colombo Plan for training in *Aluminising of ferrous materials*, has resumed duties from May 4, 1959.

* * * *

- The following Senior Scientific Officers from the CFRI, Jealgora have left India on May 21, 1959 on deputation for training in the U.K. under Colombo Plan for a period of 6 months each.

(*Contd. on page 4, Col. 1*)

CENTRAL FOOD TECHNOLOGICAL RESEARCH LIBRARY MYSORE 8-7-59



NML, JAMSHEDPUR—Vacuum fusion apparatus for accurate determination of gases in steel designed and fabricated at the Laboratory

BRIEFS

Wealth of India

Raw Materials, Vol. V : (H—K)

The Council of Scientific & Industrial Research have recently brought out the Fifth Volume of the Raw Materials series of the Encyclopaedia : "Wealth of India—a Dictionary of Indian Raw Materials and Industrial Products".

With the present volume, the first half of the series on Raw Materials has been completed. It contains 380 entries including 370 on plant species, 7 on animals and 3 on minerals. It follows mainly the pattern adopted in the previous volumes. The plant resources are dealt with under their botanical Latin names, while the animal and mineral resources are given under their common names. There are about 380 entries in all, the more important among them being : *Helianthus* (Sunflower), *Hevea* (Para Rubber), *Hibiscus* (Mesta), *Holarrhena* (Kurchi), *Hordeum* (Barley), *Hydnocarpus* (Chaulmoogra), *Hyoscyamus* (Henbane), *Indigofera* (Indigo), *Ipomoea* (Sweet Potato), *Jasminum* (Jasmine), *Juglans* (Walnut) and *Juniperus* (Juniper), among plants ; Iron and Iron ores and Kyanite among minerals ; and Insects and Insect Pests among animals.

The articles are brief, concise, based on critical evaluation of information collected and collated from various sources and are presented in a manner understandable and useful to both laymen and technical personnel. Selected references to original sources of literature have also been given to help those interested in further details. An index covering vernacular and English names of the materials dealt with in the volume has been appended.

The 332-page publication (price, Rs. 30 per copy), printed on imitation art paper (demy 4to) includes 10 plates and 169 text figures.

Literature Review on Oils and Fats, 1957

The Review, ninth in the series, has been recently brought out by the *Vanaspati Research Advisory Committee* of the Council in collaboration with the *Central Food Technological Research Institute*, Mysore.

The Review covers literature published on the subject in India and abroad in 1957 and comprises six sections. viz., statistical survey ; oilseeds ; processing of oils and fats ; spoilage ; chemistry, characteristics, composition and analysis of oils and fats ; and nutrition and metabolism. There are two appendices. Appendix 1 gives the characteristics and composition of 72 newly recorded oils and fats (45 vegetable and 15 fish oils and 12 animal fats). The second appendix gives an annotated list of books and other miscellaneous publications brought out and information on symposia held during the year. Over 800 references have been cited. Copies are available from the Director, Central Food Technological Research Institute, Mysore.

'Indians Abroad' Directories

The National Register Unit, CSIR, has published four more Directories —B & A-3, E-7, M-3 & ST-7—giving particulars of 57 business administrators and accountants, 146 engineers, 63 medical and allied personnel and 132 scientists and technologists.

RESEARCH COMMITTEE MEMBERSHIPS

Dr. B.P. Pal, Director, Indian Agricultural Research Institute, New Delhi will act as Chairman of the *Biological Research Committee* during the absence abroad of Prof. P. Maheshwari, Chairman.

Shri B.S. Krishnamachar, Asstt. Director, Indian Standards Institution, New Delhi, has been nominated a member of the *Metals Research Committee vice* Shri T.V. Joseph.

Shri R.N. Kapur, Calcutta, has been nominated a representative of the Indian Iron & Steel Co. Ltd. on the *Metals Research Committee*.

Shri P.B. Kurup, Managing Director, Techno-chemical Industries Ltd., Kozhikode has been nominated a representative of the Indian Central Coconut Committee on the *Chemical Research Committee*.

Air Commodore M.S. Chaturvedi, Air Officer-in-charge has been nominated to represent the Air Headquarters on the *Aeronautical Research Committee*.

The following have been nominated members of the *Radio Research Committee* as representatives of organisations noted against their names in brackets.

Shri S. Myageri, Bombay (Radio Manufacturers' Association of India); and Shri B.V. Baliga, Managing Director, Bharat Electronics Ltd., Bangalore (Bharat Electronics Ltd.).

The following have been nominated members of the *Wind Power Sub-Committee* as representatives of organisations noted against their names in brackets.

Shri K.S. Krishnaswamy, Deputy Director-General & Shri S. Rajagopalan, Assistant Director-General, member and alternate member respectively, Directorate General of Health Services (Ministry of Health); Shri S. Ramamritham, Deputy Director, Research & Development (Civil Aviation Department); Shri S. Swayambu, Director, Central Water & Power Commission (Central Water & Power Commission); Shri Jashbhai Patel, Head of the Department, Jamnalal Bajaj Research Institute for Village Industries (Khadi and Village Industries Commission) ; Dr. U.K. Bose, Meteorologist, (India Meteorological Department) and the Irrigation Adviser to the Government of India (Department of Agriculture, Ministry of Food & Agriculture).

RESEARCH FELLOWSHIPS

The following have been awarded CSIR *Fellowships* for research on the schemes noted against their names :

Senior Fellowship

1. Dr. (Miss) Doly Roy—*Biochemical studies on the synthesis of pyrimidine derivatives as nucleic acid antagonists* (University College of Science & Technology, Calcutta).

Junior Fellowships

1. Shri Nirmalendu Dutt—*Acid polymerization of furfural and 5-hydroxymethyl furfural (HMF)* (University College of Science & Technology, Calcutta).

2. Shri Sudhir Kumar Das—*Cell metabolism unit* (University College of Science & Technology, Calcutta).

3. Shri Amar Nath Shrivastava—*Electric dipole moment and inter-action of solute and solvent* (Department of Chemistry, Allahabad University, Allahabad).

RESEARCH IN PROGRESS

National Laboratories

National Metallurgical Laboratory, Jamshedpur

Beneficiation of U. P. Limestone—Experiments have been carried out for beneficiation of low grade limestone (CaO, 35.4; SiO_2, 31.8; MgO, 1.1; Fe_2O_3, 2.05 ; and Al_2O_3, 1.16 per cent) sample from Toli village, Garhwal District, U.P.

After liberating the quartz, the principal gangue has been separated at—150 mesh. Flotation of the residue using sodium silicate, oleic acid and pine oil has yielded a concentrate assaying CaO, 47.15 per cent with 96.5 per cent recovery. Cleaning of the primary floats has improved the grades to 49.2 and 51.4 per cent CaO with recoveries of 92.5 and 80.5 per cent respectively.

Central Glass & Ceramic Research Institute, Calcutta

Ground Coat Enamels without Cobalt Oxide—Investigations on the possibility of replacing cobalt oxide (considered to be indispensable for good adherence between the ground coat enamel and iron base and at present imported) have resulted in the development of suitable compositions without cobalt oxide. Cobalt-free ground coat enamels prepared by using these compositions compared favourably with cobalt enamels in respect of adherence, finish and refiring behaviour.

Sponsored Research

(Completed Scheme)

Some Aspects of Oceanographic Research—A systematic study of occurrence, distribution and properties of marine sediments of the Bay of Bengal was undertaken grouped under the heads (i) Continental shelf sediments, (ii) development of Kakinada Bay, and (iii) beaches with special reference to black sand concentrates.

The sea floor off the delta of all the rivers as well as the continental slope contain fine grained clays and a variety of lithological units. Oolites, coarse sand and a zone of lime deposits occur in the outer shelf. The colour, grain size, nature of minerals, organic matter and Foraminifera of the sediments have been studied.

The cause of formation of spit at the eastern side of the Kakinada bay and consequent erosion on the north of the bay have been investigated.

Short term and long term beach cycles have been established by regular profile measurements of the beaches and the effect of break-water at the Visakhapatnam beach has been studied. Spring tides associated with high waves of the southwest monsoon are responsible for formation of excellent black sand concentrates.

Thirty research papers, including ten papers presented at various international symposia, have been published as a result of the work—C. MAHADEVAN; M. SUBBA RAO & Ed. B. VIJAYAN, Andhra University, Waltair (Feb. 1, 1954 to March 31, 1959).

RESEARCH PAPERS

STUDIES IN LITHIUM OXIDE SYSTEM: PART III—LIQUID IMMISCIBILITY IN THE SYSTEM Li_2 O—B_2 O_3 SiO_2—B.S.R. Sastry & F.A. Hummel, RRL, Hyderabad. *J. Amer. ceram. Soc.*, **42** (1959), 81-88.

URINARY EXCRETION OF RADIOACTIVE VITAMIN B_{12} IN THE INVESTIGATION OF TROPICAL NUTRITIONAL MEGALOBLASTIC ANAEMIAS—S. Kaul, A.K. Das Gupta & N.R. Krishnan. NCL Poona. *Indian J. med. Res.*, **47** (1959) 139-47.

THE EFFECT OF SPECIMEN ZINC ON THE QUENCH-AGEING of AN ALUMINIUM—3.8% COPPER ALLOY—Ved Prakash & K.M. Entwistle, NML, Jamshedpur. *J. Inst. Met.*, **87** (1959), 262-64.

PLATING ON ALUMINIUM USING AN IRON INTER-LAYER : PART I—APPLICATION OF AN IRON INTER-LAYER WITH SUBSEQUENT FLASH-PLATING OF COPPER OR BRASS—D.S. Tandon & T. Benerjee, NML, Jamshedpur. *Trans. Indian Inst. Metals*, **12** (1959) 37-44.

RRL, HYDERABAD—Low temperature tar distillation plant in operation at the Laboratory

PERSONAL

(Contd. from page 1, col. 3)

Sarvashri T. N. Basu (*Coal survey coordination work, including seam correlation, estimation of reserves in addition to supply of raw materials to pilot plant*); **A. K. Mukherjee** & **B. S. Deshmukh** (*Physical and chemical survey of coals and their utilization*); and **A. K. Chakravarti** (*Coal washing; improvement of coal production and of metallurgical coke*).

●**Shri A. K. Ganguli**, Senior Scientific Assistant, CFRI, Jealgora left on May 1, 1959 for Prague on deputation under the *Czechoslovakian Government Scholarship* (1958-59), for *Process study in operation for the manufacture of synthetic fuels.*

* * * *

Shri P.K.K. Nair, Senior Scientific Assistant, NBG, Lucknow, has been awarded Ph.D. degree of the Lucknow University for his thesis, *Studies in the Palynology of Kashmir.*

* * * *

●**Dr. B. R. Nijhawan**, Director and **Shri P. P. Bhatnagar**, Asstt. Director, NML, Jamshedpur have been nominated principal member and alternate member respectively of the *Working Group XI—Metallurgical Industries* of the Uttar Pradesh Government.

●**Dr. V. Subrahmanyam**, Director, CFTRI, Mysore, has been nominated Chairman, *Technological Sub-Committee* of the Indian Central Coconut Committee.

●**Dr. L. A. Ramdas**, Asstt. Director, NPL, New Delhi has been nominated a member on the Advisory Council of the Association for Applied Solar Energy, Phoenix, Arizona, U.S.A.

●The following Officers of the RRL, Hyderabad, have been recognised as guides for supervising research work of the candidates who register for the doctorate degree of the Osmania University, Hyderabad.

Dr. S. Hussain Zaheer, Dr. S.A. Saletore, Dr. D. S. Datar, Dr. M. G. Krishna, Dr. G. S. Sidhu, Dr. K. S. Chari, Dr. K. T. Achaya, Dr. I. Kishore, Dr. J. S. Agarwal, Dr. P. M. Bhargava, Dr. C. Chenna Reddy, Dr. Y. Venkatesham and **Dr. B. S. R. Sastry.**

PATENTS & PROCESSESS

Applications Filed

INDIA

67821 : *A process for the production of fungicides from coal tar*—J.G. Saha, A.N. Basu & A. Lahiri, CFRI, Jealgora.

67822 : *A process for the extraction of phenols from coal-tar-urex process*—J.G. Saha, A.N. Basu & A. Lahiri, CFRI, Jealgora.

67871 : *A method for the manufacture of porous bronze bearings*—S. Ranganathan, NML, Jamshedpur.

67931 : *Preparation of peppersal* (a new flavouring) *from waste pepper*—T.N. Ramachandra Rao. C.T. Dwarakanath & D.S. Johar, CFTRI, Mysore.

67932 : *Improvement in or relating to the process of separation and isolation of the physiologically active principles of nim oil* (Melia indica)—C.R. Mitra, NCL, Poona.

GERMANY

C 18 983 IVb/12 o : *A process for the preparation of dihydrojasmone*—J.H. Amin & S.C. Bhattacharyya, NCL, Poona.

U.K.

14797/59 : *Improvements in or relating to the refining and the utilization of cottonseed products*—T.R. Seshadri & K. Chander, University of Delhi, Delhi.

18282/59 : *A new process for the production of 4-hydroxycoumarin and its derivatives*—V.R. Shah, J.L. Bose & R.C. Shah, NCL, Poona.

SWITZERLAND

73388 : *A new process for the production of 4-hydroxycoumarin and its derivatives*—V.R. Shah, J.L. Bose & R.C. Shah, NCL, Poona.

HOLLAND

239,343 : *A process for the preparation of dihydrojasmone*—J.H. Amin & S.C. Bhattacharyya, NCL, Poona.

Applications Accepted

INDIA

61978 : *New stainless steels and methods of preparing them*—B.R. Nijhawan, P.K. Gupte, S.S. Bhatnagar & B.K. Guha, NML, Jamshedpur.

Process Leased Out

The process, *Duplicating, Printing and Allied Black Inks* (Indian Pat. No. 40257) developed at the Delhi Laboratory of BSIR, has been leased on exclusive basis for the whole of India to M/s Mysore Lac and Paint Works Ltd., Mysore.

Regional Research Laboratory, Jammu-Tawi

Rooted suckers of JAPANESE MINT (*Mentha arvensis*) and ENGLISH DILL (*Anethum graveolens*) are available from fresh harvest for commercial cultivation.

For particulars, instructions for cultivation, and prices, please contact :

Officer-in-charge,
Regional Research Laboratory,
Jammu-Tawi.

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CSIR NEWS

VOL. 9 NEW DELHI — JULY 11, 1959 : ASADHA 20, 1881 NO. 13

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MYSORE

CSIR Governing Body and Board Reconstituted

The Government of India have notified that for the purposes of the *Societies Registration Act* (XXI of 1860), the Governing Body of the Council of Scientific & Industrial Research and the Board of Scientific & Industrial Research have been reconstituted for a period of three years with effect from 1st April, 1959 and shall consist of the following:

Governing Body

1. Prime Minister of India (*President*).
2. Minister-in-charge of the Ministry of Scientific Research & Cultural Affairs, New Delhi (*Vice-President*).
3. Shri Morarji Desai, Minister for Finance, New Delhi.
4. Shri Lal Bahadur Shastri, Minister for Commerce & Industry, New Delhi.
5. Sardar Swaran Singh, Minister for Steel, Mines & Fuel, New Delhi.
6. Shri K.C. Reddy, Minister for Works, Housing & Supply, New Delhi.
7. Shri V.K. Krishna Menon, Minister for Defence, New Delhi.
8. Shri Manubhai Shah, Minister for Industries, New Delhi.
9. Prof. M.S. Thacker, Director-General, Scientific & Industrial Research, New Delhi.
10. Financial Adviser to the CSIR, (Joint Secretary, Ministry for Finance), New Delhi.
11. Dr. H.J. Bhabha, F.R.S., Secretary, Department of Atomic Energy, Bombay.
12. Shri D.M. Bhattacharya, President, Bengal National Chamber of Commerce, Calcutta.
13. Shri G.D. Birla, 5-Tis January Marg, New Delhi.
14. Shri J.J. Ghandy, Resident Director, Tata Iron and Steel Co. Ltd., Jamshedpur.
15. Dr. K.A. Hamied, 289, Bellasis Road, Byculla, Bombay.
16. Shri Kasturbhai Lalbhai, Pankore's Naka, Ahmedabad.
17. Shri A.N. Khosla, Vice-Chancellor, Roorkee University, Roorkee.
18. Dr. D.S. Kothari, Scientific Adviser to the Minister of Defence, New Delhi.
19. Prof. P.C. Mahalanobis, F.R.S., 8-King George's Avenue, New Delhi.
20. Dr. Jivraj N. Mehta, Minister for Finance, Government of Bombay, Bombay.
21. Shri Balvantray G. Mehta, M. P., New Delhi.
22. Raja Muthiah Chettiar of Chettinad, Chettinad House, Madras.
23. Shri A. Ramaswami Mudaliar, India Steamship House, 21, Old Court House Street, Calcutta.
24. Dr. B.C. Roy, Chief Minister, West Bengal, Calcutta.
25. Lala Shri Ram, 22-Curzon Road, New Delhi.
26. Shri J.R.D. Tata, Chairman, Tata Industries Ltd., Bombay.
27. Shri M. Valiulla, M.P. Member, Rajya Sabha, New Delhi.

28 & 29. Two representatives of the Board of Scientific & Industrial Research, New Delhi.

Board of Scientific & Industrial Research

1. Prime Minister of India, (*President*).
2. Minister-in-charge of the Ministry of Scientific Research & Cultural Affairs, New Delhi (*Vice-President*).
3. Shri Manubhai Shah, Minister for Industries, New Delhi.
4. Prof. M.S. Thacker, Director-General, Scientific & Industrial Research, New Delhi.

(Contd. on p. 4, col. 1)

Prof. M. S. Thacker

Prof. M. S. Thacker, Director-General, Scientific & Industrial Research and Secretary to the Government of India, Ministry of Scientific Research & Cultural Affairs, left India on July 4, 1959 on a 4-week tour in U. K. and France. While in U. K., Prof. Thacker will have discussions with the British Government and the Federation of British Industries on the College of Engineering & Technology which is being established at Delhi. He will represent India at the Commonwealth Education Conference to be held at Oxford. Prof. Thacker will later visit France, the French Government having invited him to discuss problems of research and development with leaders of science and technology in that country.

The President, Council of Scientific and Industrial Research, has been pleased to approve that Dr. K. S. Krishnan, Director, NPL, New Delhi will look after the work of the Director-General, Scientific & Industrial Research, during the period of deputation of Prof. M. S. Thacker to U. K. and France from July 4 to August 2, 1959; he will also exercise the power of the Vice-President during the absence of the Vice-President, CSIR from India from July 8 to July 28, 1959.

Dr. B. N. Mitra

Dr. B.N. Mitra, Assistant Director - General, CSIR has been appointed Director of the Regional Research Laboratory, Assam, with effect from Aug. 1, 1959.

Dr. Mitra (*b.* Jan. 26, 1905) after obtaining his D.Sc. degree in Chemistry from the Dacca University in 1935, proceeded to Minnesota on a Rockfeller

(Contd. on p. 2, col. 1)

DR. B. N. MITRA

(*Contd. from p. 1, col. 3*)

Foundation Fellowship in 1936-37 and obtained the Ph. D. degree in Agricultural Biochemistry in 1937. He also worked for some time at the Rothamstead Experimental Station, Herpenden, England.

After returning to India, Dr. Mitra joined the Forest Research Institute & Colleges, Dehra Dun and later worked at the Imperial Serological Department and All-India Institute of Hygiene & Public Health, Calcutta. He was commissioned in the Army during the last war and rose to the rank of Colonel before he was released early in 1958 and was appointed Assistant Director-General, CSIR from Jan. 28, 1958. During his tenure in the Army, he held a number of key positions, such as Superintendent of Proof & Experiments, Chief Superintendent of Ammunition Development, etc. He was responsible for research, design and development of armament stores.

Dr. Mitra attended on invitation the Third International Congress in Microbiology in New York in 1939 and the XIth Session of the International Congress of Pure and Applied Chemistry in London in 1946. He is a Fellow of the Royal Institute of Chemistry of Great Britain & Ireland and a Member of the Society of Sigma XI of the Minnesota Chapter of America.

PERSONAL

●**DR. C.A. SASTRY** has been appointed Senior Scientific Officer: Grade II, RRL, Hyderabad with effect from June 2, 1959.

●**DR. G.N. SHRIVASTAVA, SHRI O.P. SRIVASTAVA** and **SHRI S.K. CHATTERJEE** have been appointed, on promotion, Junior Scientific Officers, CDRI, Lucknow, with effect from May 29, 1959.

●**SHRI KRISHIN BHAMBHANI** has been appointed Civil Engineer in the CSIR Secretariat with effect from June 1, 1959 in the regular establishment.

* * *

●**DR. B. MUKERJI**, Director, CDRI, Lucknow left on June 15, 1959 for France, under the Indo-French Technical Co-operation Agreement on a five-weeks' tour. Dr. Mukerji will visit laboratories in England, Rome and Cairo, and acquaint himself with the progress in the fields of pharmacology, endocrinology, atomic energy and biophysics.

●**SHRI D.D. JATKAR**, Senior Scientific Assistant, Regional Research Laboratory, Hyderabad left on June 24, 1959 for West Germany on deputation under the Federal Republic of Germany Government Scholarship to undergo practical training in *Paper industry*.

* * *

●**DR. K. VENKATARAMAN**, Director, NCL, Poona has been nominated a member of the Technical Committee of the *Silk & Art Silk Mills Research Association*, Bombay.

●**DR. A. LAHIRI**, Director, and **SHRI A.N. BASU**, Assistant Director, CFRI, Jealgora have been nominated principal member and alternate member respectively of the Sectional Committee on *Composition and methods of test for petroleum products and lubricants* of the Indian Standards Institution.

●**DR. B. MUKERJI**, Director, CDRI, Lucknow has been nominated a member of the Committee on *Animal Diseases and Pests* of the Indian Council of Agricultural Research, New Delhi for the period 1959–62.

●**DR. S.L. KAPUR**, Asst. Director, NCL, Poona has been nominated a member of the Sectional Committee on *Plastics* of the Indian Standards Institution.

BRIEFS

IGY National Committee

News-letter No. 18 (May 11, 1959) contains (i) a brief review of 'Preliminary results of scientific researches on the first Soviet artificial earth satellite and rockets' (150 pp. with illustrations) brought out by the U.S.S.R. Academy of Sciences, (ii) data on the launching of IGY satellite 1959 alpha and on Sputnik III, and (iii) report of the satellite tracking programme at Nainital.

News-letter No. 19 (May 26, 1959) includes recordings of geomagnetism, latitudes and longitudes and gravity and details of oceanographical studies carried out by the Survey of India from April 4, 1958 to Dec. 31, 1958.

The densities and temperatures of upper atmosphere from heights of 200-600 km. as inferred from American satellites and Russian artificial earth satellites are presented in News-letter No. 20 (May, 27 1959). The letter also carries a summary of the report on the Survey of the Sonapani Glacier of Lahul, Kangra Dist., Punjab, issued by the Geological Survey of India.

News-letter No. 21 (June 25, 1959) gives further details of work carried out by the Geological Survey of India.

Committee on Utilisation of Food and Agricultural Wastes

The Committee (*CSIR News*, Vol. 7, No. 7, p. 1) has brought out a 79-page mimeographed report on the availability and methods of utilisation of wastes from tobacco, food processing, slaughter house, fish, cotton textile, tea, sugar, jute, arecanut and sisal industries.

The report also contains recommendations of the Committee on methods of better utilisation of the wastes and on the by-products which can be recovered in greater amounts than at present, from the wastes. The possibilities of using some of the wastes, as suggested by different organisations, have also been included.

Research Schemes Terminated

The following research schemes have been terminated with effect from the dates mentioned against them :

1. *Ruling engine for diffraction gratings*—Dr. P.K. Kichlu, Department of Physics, University of Delhi, Delhi (July 1, 1959).

2. *Studies on the effect of some antivitamins on bacterial metabolism*—Dr. B.C. Guha, University College of Science & Technology, Calcutta (May 31, 1959).

3. *Some constitutive studies on seed fat composition of arid zones with particular reference to biogenetic factors*—Shri A. Sen Gupta, Birla College, Pilani (June 30, 1959).

RESEARCH IN PROGRESS

National Laboratories

Central Electro-chemical Research Institute, Karaikudi

Graphite Cathode for Production of Zinc—Cathodes from magnesium and its alloys are reported to be the best for the preparation of zinc by the electrolysis of sodium zincate solution. Investigations using tantalum, titanium and graphite cathodes have shown that these cathodes are equally satisfactory for the preparation of zinc powder. Optimum conditions for preparing zinc powder using graphite cathode, which is readily available, have been worked out. Measurement of cathode potentials has confirmed that the graphite cathode is as good as the magnesium cathode for the purpose—S. Viswanathan, S. Sampath & H.V.K. Udupa.

Central Salt Research Institute, Bhavnagar

Astrakanitish Khari Salt—Further investigations on Khari salt from Bihar have shown that the salt can be classified into two types, Vant Hoffite and Astrakanite, depending on its composition. The process of preparing sodium sulphate reported in *CSIR News*, Vol. 8, No. 20, p. 3, is applicable to Vant Hoffite.

A method for preparing sodium sulphate from Astrakanite (containing lesser concentration of sodium sulphate), based on phase rule studies, has been worked out.

Sponsored Research

Essential Oils Research Centre, NCL, Poona—Investigations have been carried out on the essential oils of spearmint, dill, Malabar lemongrass, Indian turpentine, varieties of Indian vetiver, agarwood, sandalwood, wild ginger and costus root oils. Many new and interesting terpenoids have been isolated from these oils and their structures elucidated. Structure, stereochemistry and absolute configuration of agarol, the main constituent of agarwood oil, has been determined and its relation to costol, the alcohol from costus root oil established. By the new solvent extraction procedure developed for the extraction of costus root, the essential oil contained in it has been isolated for the first time in the form in which it exists in the roots, in very high yields and containing a high proportion of lactonic constituents, most of which can be obtained in the crystalline form. A series of other useful oxygenated bodies have also been isolated.

Methods of quantitative evaluation of some important essential oils through infrared and ultraviolet spectrophotometry have been established.

Methods of synthesis of macrocyclic compounds of the type of civetone, dihydrocivetone and exaltone have been worked out. Pilot plant trials for the synthesis of civetone have been successfully carried out. Two new methods have also been established for the synthesis of the well-known perfumery material, dihydrojasmone. One of these appears to be superior to the methods described in literature for industrial production. Methods for the preparation of dihydroisojasmone, peach aldehyde and cinnamyl alcohol have been standardised.

Some of the results of the investigations have been covered by patents in India and abroad.

Investigations on some of the commercially important resins such as *shal*, *damar*, *salaigum*, etc. have been undertaken.

Effect of Antivitamins on Bacterial Metabolism—As pteridine and pyrimidine derivatives are known to act as antimetabolites in the biosynthesis of nucleic acid and to possess therapeutic potentialities in parasitic, viral and neoplastic diseases, nineteen derivatives of pteridine and pyrimidine were synthesised. On testing them against *Streptococcus faecalis*, *Lactobacillus arabinosus* and *Escherichia coli*, they proved to be strong inhibitors of the growth of these organisms.

The thiosemicarbazone, semicarbazone and *p*-chloroanil derivatives of 2-amino-4-hydroxy-6-pteridine-carboxaldehyde have been found to be competitive and 4-(*p*-chloro-anilino)-pteridines to be non-competitive inhibitors of folic acid in regard to the growth of *S. faecalis*. The pyrimidine derivatives obtained by the replacement of $-NH_2$ group by arylamino or arylguanidino groups at C_2 or C_4 position possess greatly enhanced inhibitory property with regard to all these organisms compared to the parent 2,4-diamino-6-hydroxy-pyrimidine. This inhibitory activity is further increased when both the NH_2 groups at C_2 and C_4 positions are replaced by arylamino groups. Again, the nature of substitution in the *para* position of the benzene ring has some significant effect on the inhibitory property. The electron attracting groups (Cl, NO_2) in the *para* position of the benzene ring enhance antibacterial activity much more than an electron donating group ($-OCH_3$, $-CH_3$) in the same position. The activity of the groups at the *para* position of the benzene ring is of the order: $H < -OCH_3 < -CH_3 < -NO_2 < -Cl$.

Accordingly, 2,4-bis(*p*-chloro-anilino)-6-hydroxy pyrimidine has been found to be the most powerful inhibitor amongst the derivatives synthesised. The inhibitory activity of this pyrimidine is fairly strong compared to some well-known nucleic acid inhibitors, e.g., azauracil, azathymine, bromouracil and pyrimithamine.

All the five pteridine derivatives and some of the pyrimidine derivatives do not show any noticeable antitumour activity.

2,4-Bis(*p*-chloroanilino)-6-hydroxy-pyrimidine has been tested on bacteriophage (*Shigella shigae*) and found to be highly active on this virus.

Seven research papers have been published as a result of these investigations—B. C. Guha, S. Ghosh & Doly Roy, University College of Science & Technology, Calcutta (May 1, 1956—May 31, 1959).

B.S.I.R.

(*Contd. from p. 1, col. 2*)

5. Dr. Atma Ram, Director, Central Glass & Ceramic Research Institute, Calcutta.
6. Shri F.C. Badhwar, 3-Tis January Marg, New Delhi.
7. Dr. H.J. Bhabha, F.R.S., Secretary, Department of Atomic Energy, Bombay.
8. Prof. S.N. Bose, F.R.S., National Professor, 22-Iswar Mill Lane, Calcutta.
9. Shri J. J. Ghandy, Resident Director, Tata Iron & Steel Co. Ltd., Jamshedpur.
10. Dr. B. C. Guha, Head of the Department of Applied Chemistry, University College of Science & Technology, 92-Upper Circular Road, Calcutta.
11. Dr. K.A. Hamied, 289-Bellasis Road, Byculla, Bombay.
12. Shri M. Hayath, Chairman, Central Water & Power Commission, New Delhi.
13. Shri Kasturbhai Lalbhai, Pankore's Naka, Ahmedabad.
14. Shri S.S. Khera, Secretary, Department of Mines and Fuel, Ministry of Steel, Mines & Fuel, New Delhi.
15. Shri A.N. Khosla, Vice-Chancellor, Roorkee University, Roorkee.
16. Dr. D.S. Kothari, Scientific Adviser to the Minister of Defence, New Delhi.
17. Dr. K.S. Krishnan, F.R.S., Director, National Physical Laboratory, New Delhi.
18. Prof. P. Maheshwari, Head of Botany Department, University of Delhi, Delhi.
19. Dr. Jivraj N. Mehta, Minister for Finance, Government of Bombay, Bombay.
20. Shri P.C. Mukerjee, Chairman, Railway Board, New Delhi.
21. Shri P.A. Narielwala, Director, Tata Industries Ltd., Bombay.
22. Dr. C.G. Pandit, Director, Indian Council of Medical Research, New Delhi.
23. Shri M.S. Randhawa, Vice-Chairman, Indian Council of Agricultural Research, New Delhi.
24. Dr. Vikram A. Sarabhai, Physical Research Laboratory, Ahmedabad.
25. Shri D.N. Sen, Founder President, Glass Manufacturer's Federation, Calcutta.
26. Lala Shri Ram, 22-Curzon Road, New Delhi.

PATENTS & PROCESSES

Applications Filed

India

68055 : *Improvements in or relating to oxidising salts*—O.P. Kulshreshtha & K.C. Srivastava, NPL, New Delhi.

France

795809 : *A process for the preparation of dihydrojasmone*—J.H. Amin & S.C. Bhattacharyya, NCL, Poona.

Switzerland

73530 : *A new process for the preparation of dihydrojasmone*—J.H. Amin & S.C. Bhattacharyya, NCL, Poona.

Applications Accepted

India

62490 : *A process for creating deformation in the cable ducts in prestressed concrete structures*—S.K. Narayana & S.M.K. Chetty, CBRI, Roorkee.

62379 : *Improvements in and or relating to the electrolytic preparation of manganic sulphate*—H.V.K. Udupa, M.S. Venkatachalapathi & R. Ramaswamy, CECRI, Karaikudi.

64352 : *A method for the extraction of diosgenin from Dioscorea tubers*—V. Paul, K.L. Handa & I.C. Chopra, RRL, Jammu & Kashmir.

64353 : *Improvements in the manufacture of furan compounds*—R.T. Thampy, K. Kathpalia & V.R. Nagarajan, Shri Ram Institute for Industrial Research, Delhi.

U.K.

8772/57 : *An improved process for the preparation of β-ionone*—H.J.V. Krishna & B.N. Joshi, NCL, Poona.

Processes Leased Out

The following processes developed at the Shri Ram Institute for Industrial Research, Delhi, have been leased out for commercial development to M/s Sardesai Brothers Private Ltd., Bilimora.

1. *Shrifirset compounds for cellulosic fabrics i.e. Shrifirset III* (Non-Patented) and *Shrifirset V* (Indian Pat. Nos. 65282 and 59835) & 2. *Stable bath catalysts for amino plast resins i.e. Stabaca 102* (Indian Pat. No. 62939).

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CSIR NEWS

VOL. 9 NEW DELHI — JULY 25, 1959 : SRAVANA 3, 1881 NO. 14

CSIR Research Committees to hold Annual Symposia

The Governing Body of the CSIR approved the recommendation of the Board of Scientific & Industrial Research that each Research Committee should hold an annual symposium (1) to review the current state of knowledge in the subjects which come within the purview of the Committee and (2) to provide a platform to active research workers to present details of investigations in progress or investigations proposed to be taken up.

A meeting of Chairmen of all Research Committees will be held on August 22, 1959 at 10.00 a.m. in the CSIR Conference Room, New Delhi to formulate a policy with regard to the organisation of annual symposia, group discussions, etc. by Research Committees.

MEETINGS

A meeting of the *Executive Council*, NML, Jamshedpur, will be held at the Laboratory on August 1, 1959 at 11.00 a.m. Shri J.J. Ghandy will preside.

A meeting of the *Executive Council*, CLRI, Madras, will be held at the Institute on August 3, 1959, at 4.00 p.m. Dr. A. Lakshmanaswami Mudaliar will preside.

A meeting of the *Executive Council*, CBRI, Roorkee, will be held at the Conference Room of the CSIR Secretariat, New Delhi, on August 10, 1959 at 10.00 a.m. Shri N. Dandekar will preside.

A meeting of the *Pharmaceuticals & Drugs Research Committee* will be held at the CSIR Secretariat, New Delhi, on August 10, 1959 at 10.30 a.m. Dr. K.A. Hamied will preside.

Finance Sub-Committee Reconstituted

The President, CSIR, has been pleased to reconstitute the Finance Sub-Committee of the Governing Body of the Council of Scientific & Industrial Research for a period of three years with effect from April 1, 1959. The Committee consists of the following : Shri Morarji Desai, Union Minister for Finance (*Chairman*); Director-General, Scientific & Industrial Research and Financial Adviser to CSIR (*Members, ex officio*) ; Shri Kasturbhai Lalbhai, Ahmedabad ; Lala Shri Ram, New Delhi ; Shri J.J. Ghandy, Resident Director, Tata Iron & Steel Co., Ltd., Jamshedpur ; and Dr. D.S. Kothari, Scientific Adviser to the Minister of Defence, New Delhi (*Members*) ; and Secretary, CSIR (*Secretary, ex officio*).

Manufacture of Foot-ball Leather—Demonstration at CLRI

Practical demonstration of the process of manufacture of *Foot-ball Leather* will commence at the Central Leather Research Institute, Madras on July 27, 1959.

PERSONAL

- Shri K. G. Krishnamurthi, Deputy Secretary, CSIR Secretariat, New Delhi, has been appointed Technical Secretary to the Director-General, Scientific & Industrial Research, with effect from July 13, 1959. Shri R. P. Pathak and Shri O. P. Khanna will continue to officiate as Deputy Secretary and Under Secretary respectively in the CSIR Secretariat till further orders.

- Dr. Bahadur Singh has been appointed Asst. Director, NBG, Lucknow, with effect from July 1, 1959.

Born on Jan. 10, 1908, Dr. Singh graduated with First Class Honours from the Agra University, and later took his Ph.D. degree from Lucknow University. He joined Balwant Rajput College, Agra in 1938, and was appointed Head of the Department of Botany in 1940. Dr. Singh visited U. K. in 1951-52 for further studies at the Cambridge University.

- Dr. G. C. Mitra has been appointed Senior Scientific Officer: Grade I, NBG, Lucknow, with effect from July 1, 1959.

- Dr. C. R. Mitra, Junior Scientific Officer, NCL, Poona, has been appointed Senior Scientific Officer: Grade II, NBG, Lucknow, with effect from June 12, 1959.

- Shri Lakhbir Singh has been appointed, on promotion, Junior Scientific Officer, NCL, Poona, with effect from June 27, 1959.

- Shri A.L. Kapoor, Junior Scientific Officer, NCL, Poona, relinquished charge of his post with effect from July 9, 1959.

- Shri T. P. Bijlani has been appointed Section Officer: Grade III, CECRI, Karaikudi, with effect from May 15, 1959.

* * *

- The following officers of the CSIR have been nominated members of the *Heavy Industries Plan Committee* constituted by the Government of Uttar Pradesh :

Dr. Atma Ram, Director, CGCRI, Calcutta; Prof. K.N. Kaul, Director, NBG, Lucknow ; and Dr. B. Mukerji, Director, CDRI, Lucknow.

- Dr. P. Nilakantan, Director, National Aeronautical Research Laboratory, Bangalore, has been nominated a member of the Council of the *Indian Academy of Sciences*, Bangalore.

- Dr. V. Subrahmanyan, Director, CFTRI, Mysore, has been nominated a member on the *Soil Science Committee* of the *Indian Council of Agricultural Research*, New Delhi.

- Dr. S.M. Das Gupta, RLO, Calcutta, has been elected a member of *International Society for Fat Research* (International Gesellschaft fur Fettwissenschaft), Graz, Germany.

- Dr. D.S. Bhatia, Asst. Director, CFTRI, Mysore, has been nominated a member of the *Dairy Science Committee* of the *Indian Council of Agricultural Research*, New Delhi.

●Prof. M. V. Bopardikar, Asst. Director, CPHERI, Nagpur, has been nominated a member of the *WHO Expert Advisory Panel on Environmental Sanitation.*

●Dr. Girdhari Lal, Asst. Director, CFTRI, Mysore, has been nominated a member of the *Working Group for Food & Allied Industries* formed by the U.P. Government for setting up industries in the State during the Third and subsequent Five-Year Plans.

●Shri S. Bagchi, Asst. Director-in-charge, CMRS, Dhanbad, has been nominated a member on the Advisory Committee on *Coal Mining Machinery Plant* at Durgapur of the *Heavy Engineering Corporation Ltd.*, New Delhi.

●Dr. S.K. Pande, Professor, NBG, Lucknow, has been nominated a member on the *Sub-committee on Botany* of the *Board of Scientific Technology* of the Union Ministry of Education.

●Dr. Amarjit Singh, Asst. Director-in-charge, CEERI, Pilani, has been nominated a member on the *Defence Electronics Research Committee*, Ministry of Defence.

●The following officers have been nominated members of the Committees/Panels of the *Indian Standards Institution* mentioned against their names :

Shri S. Bagchi, Asst. Director-in-charge, CMRS, Dhanbad—*Wire Ropes and Wire Products* Sectional Committee.

Shri M.A. Ghani, Senior Scientific Officer, CLRI, Madras—*Adhesives* Sectional Committee.

Dr. B.C. Subba Rao, Senior Scientific Officer, NCL, Poona—*Textile Sizing and Finishing Materials* Sectional Committee.

Dr. M.L. Khanna & Shri M.R. Verma, Senior Scientific Officers, NPL, New Delhi (Principal member and alternate member respectively)—*Composition and Methods of Test for Petroleum, Petroleum Products and Lubricants* Sectional Committee.

Dr. J.S. Pruthi, Senior Scientific Officer and Dr. Ramchandra Rao, Junior Scientific Officer, CFTRI, Mysore (Principal member & alternate member respectively)—*Spices and Condiments* Sectional Committee.

Dr. R. Rajagopalan, Senior Scientific Officer, CFTRI, Mysore—*Utensils* Sectional Committee.

●Dr. Sadgopal, Deputy Director (Chemicals), Indian Standards Institution and member of the CSIR *Essential Oils Research Committee* left for France on July 21, 1959 at the invitation of the Syndicat National des Fabricants et Importateurs d'Huiles Essentialles to attend the *Second International Congress on Essential Oils* (July 23-25, 1959).

●Shri N. Mohan Rao, Junior Scientific Officer, CRRI, New Delhi returned to India from U.S.A. after completing his training in *Design and Construction of Road and Runway Pavements* under the T.C.M. Program. He resumed duty at CRRI on July 3, 1959.

BRIEFS

The *Regional Research Laboratory*, Hyderabad, has been recognized as a research centre for Ph.D. and D.Sc. degrees by the following universities : Osmania (for Chemistry and Chemical Technology); Andhra and Poona (for Organic, Inorganic and Physical Chemistry) ; Kerala, Aligarh, Banaras, Calcutta and Nagpur (for Engineering and Technology).

Research Fellowships

The following have been awarded *CSIR Fellowships* for research on the schemes noted against their names :

Senior Fellowship :

Shri H.S. Sachdev—*Chemical investigations relating to the synthesis of 3-4 disubstituted piperidine* (Panjab University, College, Hoshiarpur).

Junior Fellowships :

1. Shri P.C. Trivedi—*Study of properties of semiconductors, and transistors* (University of Gorakhpur, Gorakhpur).
2. Shri Ram Narain Mehrotra—*Oxidation of organic compounds by trivalent manganese* (University of Allahabad, Allahabad).
3. Shri Hemendra Nath Basu—*Investigation of some less known oil seeds and oils* (University College of Science & Technology, Calcutta).
4. Miss Maya Guha—*Synthetic investigation in polycyclic systems related to diterpenoids, etc.* (University College of Science & Technology, Calcutta).
5. Shri R.P. Agarwal—*Organic compounds of titanium, zirconium, cerium and thorium*, (Gorakhpur University, Gorakhpur).
6. Shri R.V. Kammathy—*Cytotaxonomical revision of Indian Commelenaceae* (Botanical Survey of India, Shillong).

* * *

The following have been nominated members of the Research Committees noted against their names :

1. Prof. S.R. Khastgir, University College of Science, Calcutta —*Radio Research Committee.*
2. Maj. Gen. R.E. Aserapa, Engineer-in-Chief, Army Headquarters, Ministry of Defence—*Civil Engineering & Hydraulic Research Committee.*
3. Shri J.P. Mital, Adviser (Irrigation) Union Ministry of Community Development and Co-operation — *Wind Power Sub-Committee.*

The following have been nominated members of the Research Committee noted against their names as representatives of the Scientific Research Committee, U.P.

Dr. B. Mukerji, Director, CDRI Lucknow (*Biological Research Committee*) and Dr. Satya Prakash, University of Allahabad, Allahabad (*Chemical Research Committee*).

Research Schemes Terminated

The following sponsored research schemes have been terminated with effect from the dates mentioned :

1. *Studies on the effect of some anti-vitamins on bacterial metabolism* —Dr. B.C. Guha, University College of Science & Technology, Calcutta (March 31, 1959).
2. *Ruling engine for diffraction gratings*—Dr. P.K. Kichlu, University of Delhi, Delhi (July 1, 1959).
3. *Experimental determination of the length of strut*—Shri B.R. Sen, Indian Institute of Technology, Kharagpur (July 31, 1959).

* * *

The research scheme, *Comparative studies on electrolyte and protein patterns in body fluids of infants and children reared on different milk products* (Investigator : Dr. A.C. Majumdar) has been transferred from the *Institute of Child Health, Calcutta* to the *Department of Pure Chemistry, University College of Science & Technology, Calcutta* with effect from July 1, 1959.

RESEARCH IN PROGRESS

National Laboratories

National Physical Laboratory, New Delhi

Detection of α- and β-Naphthols—A paper chromatographic method for the detection of α- and β-naphthols in the presence of one another has been developed. The method consists in placing one drop of the mixture on a filter paper, condensing it *in situ* with a diazo derivative of amino J acid and developing the dye mixture.

Estimation of Trivalent Chromium—The complex formation (1 : 1) of chenta acid with trivalent chromium has been taken advantage of for developing a volumetric method for the estimation of trivalent chromium in the presence of dichromate. The method consists in boiling a solution of chromium salt with a known volume of excess chenta acid and estimating the unreacted acid by titration against copper solution (*p*H, 4.5) using metal-fluor chromic indicator like calcein.

National Chemical Laboratory, Poona

Thermistors—Investigations on semiconducting materials have led to the development of a series of compounds suitable for use as thermistor materials. They have high temperature coefficients of resistance and find application in a number of instruments, e.g., sensitive thermometers, temperature controllers, fire alarms and radiosonde. Thermistors to suit different requirements of temperature resistance, sensitivity, power dissipation and time constant have been prepared in a variety of sizes and shapes (beads, rods, pellets, and flakes).

Central Electrochemical Research Institute, Karaikudi

Preparation of Chlorates—Investigations on the electrolytic preparation of sodium and potassium chlorates using lead dioxide anodes have shown that an overall current efficiency of 80 per cent in the preparation of sodium chlorate and a concentration of 500 g./l. of salt can be obtained. Studies on the large scale production of chlortaes are in progress—N. Ramachandran, V. Dhuruvan, S. Sampath & H.V.K. Udupa.

Zinc in Powder Form—Magnesium and its alloys are usually employed as cathodes in the preparation of zinc powder from sodium zincate solution. Investigations have shown that graphite can be used as a substitute for magnesium alloys and optimum conditions for the preparation of zinc powder by using graphite cathode have been worked out.

Central Road Research Institute, New Delhi

Bituminous Surface Dressings—The quantities of aggregates and binders used in the black top surfacing of roads in India are based on past practices and are empirical. A rational basis for the use of these materials has yet to be worked out.

A modified technique of surface dressing has been evolved. It consists in spreading the aggregates in two layers; the aggregates used in the second layer are of a smaller size than those in the first layer with the result that a well-knit and interlocked surface is obtained. The relative sizes and quantities of aggregates have been worked out.

A test-track has been laid on the Delhi-Mathura Road near the Institute to confirm laboratory findings and to evolve specifications for the use of highway engineers.

Indian Institute for Biochemistry & Experimental Medicine, Calcutta

Phage Typing of Vibrio Cholerae—Further studies on the phage typing of strains isolated from cholera cases in Calcutta have confirmed the earlier classification of strains into 7 types and sub-types (*CSIR News*, Vol. 7, No. 11, p. 3).

The epidemiological value of phage typing has been confirmed in a few localized epidemics where groups of cases could be traced to a single source—S. Mukerjee, U.K. Guha Roy, D.K. Guha & B.C. Rudra.

Sponsored Research

Biosynthesis of Cholesterol—The effect of ingested fats on *in vitro* synthesis of cholesterol by liver slices has been studied. Male rats from stock colony were maintained for 16 weeks on four different regiments of diet, namely, fat-free (control); 15 per cent cottonseed oil; 15 per cent cottonseed oil + 1 per cent cholesterol; and fat-free diet containing 1 per cent cholesterol. The rats were sacrificed after 16 weeks and the biosynthesis of cholesterol from $1\text{-}C^{14}$-acetate was studied by the liver slice technique. The incorporation of acetate into cholesterol in the liver slice was maximum in the group receiving 15 per cent cottonseed oil diet, whereas in the rats receiving fat-free diet, the biosynthesis of cholesterol was highly depressed. The average cholesterol biosynthesis in rats fed on fat-free diet and fat-free + 1 per cent dietary cholesterol was almost the same, indicating that feeding of cholesterol in the absence of fat does not stimulate cholesterol synthesis in the liver. The cause for the difference in cholesterol biosynthesis in rats fed on 15 per cent cottonseed oil and 15 per cent cottonseed oil + 1 per cent dietary cholesterol is under investigation—Dr. Supravat Mukherjee, University College of Science & Technology, Calcutta.

Spectroscopy of Diatomic Molecules—Studies on the spectrum of aluminium monochloride (AlCl) in the Schumann Region have led to the identification of six new excited electronic states of the molecule. A comparison with the spectra of related molecules AlF, BF, CO and N_2 (having the same number of outer electrons) has shown that some of the observed electronic states in AlCl are analogous to those of the other molecules. Probable electron configurations and term types responsible for the various excited levels in all the molecules have been compared.

The emission spectrum of iron monobromide (FeBr) molecule excited both in generator and high frequency discharges has been photographed on three prism glass littrow spectrograph. Four band systems of the molecule have been newly observed and analysed in the region λ 5720—6410. Vibrational constants have been derived for all the four systems—P. Thiruvenganna Rao & S. Paddi Reddy, Andhra University, Waltair.

PATENTS & PROCESSES

Applications Filed

India

68171 : *Compositions and methods of making welding flux*—M.R. Rao, N.V. Naidu & H.V. Bhaskar Rao, NML, Jamshedpur.

68172 : *A new process for the preparation of crotonaldehyde*—H. Ibrahim, V.V. Deshpande & N.R. Kuloor, Shri Ram Institute for Industrial Research, Delhi.

68174 : *Refractory compositions containing non-refractory chrome ore and refractory products made therefrom*—M.R. Rao, N.V. Naidu & H.V. Bhaskar Rao, NML, Jamshedpur.

U.K.

16300/59 : *A process for the preparation of dihydrojasmone*—J.H. Amin & S.C. Bhattacharyya, NCL, Poona.

Germany

C 18 977 IVb/12 qu : *A new process for the production of 4-hydroxycoumarin and its derivatives*—V. R. Shah, J.L. Bose & R.C. Shah, NCL, Poona.

Applications Accepted

India

61771 : *An improved process for the conversion of high sulphur coals into iron exchanger for water softening and the like*—M. S. Iyengar, S. Guha, M.L. Beri & A. Lahiri, CFRI, Jealgora.

64957 : *A process for the preparation and isolation of gitalin and the corresponding lanatoside from digitalis species*—N.M. Khanna, M.M. Dhar & M.L. Dhar, CDRI, Lucknow.

France

759965 : *Improvements in or relating to the preparation of costus root oil and the products thereof*—G.R. Kelkar & S.C. Bhattacharyya, NCL, Poona.

Germany

C 16 460 IVa/23a : *Improvements in or relating to the preparation of costus root oil and the products thereof*—G.R. Kelkar & S.C. Bhattacharyya, NCL, Poona.

Applications Sealed

India

59835 : *An improved process for the production of shrink and crease proof finishes on cellulose textiles*—M.B. Sattur, E. Syamalarao & V.B. Chipalkatti, Shri Ram Institute for Industrial Research, Delhi.

60333 : *Improvements in or relating to the production of battery grade maganese dioxide from manganese ores*—V. Aravamuthan & T.R. Venkatasubramanian, CECRI, Karaikudi.

Process Ready For Exploitation

Hot Face Insulation Refractories

The *Central Glass & Ceramic Research Institute*, Calcutta has developed a process (Indian Pat. No. 59456) for the manufacture of hot face insulation refractories using kyanite, which occurs in abundance in India, as the basic material. The product favourably compares with imported samples from U.S.A. and U.K.

The process does not involve the use of special equipment. The usual facilities available in a refractory plant are sufficient for undertaking the manufacture of these refractories.

Those interested in commercial exploitation of the process may write to the Secretary, National Research Development Corporation, Mandi House, New Delhi-1.

RESEARCH PAPERS

Beneficiation of coal slurries of different cleaning coals and high ash middlings for metallurgical use—A.K. Sinha, G.G. Sarkar & A. Lahiri, CFRI, Jealgora. *J. Mines, Metals & Fuels*, **7** (3) (1959), 1-7.

Further studies on weathering of coal—J. Bandopadhyaya, D.C. Mitra, J.M. Sanyal, N.N. Das Gupta & A. Lahiri, CFRI, Jealgora. *Coke & Gas*, **21** (1959), 99-104.

Studies on oxidation of coal at lower temperatures—J.N. Bhowmik, P.N. Mukherjee & A. Lahiri, CFRI, Jealgora. *Fuel, Lond.*, **38** (1959), 211-16.

Active hydrogen in coal—H.S. Rao, F. Kaiser & A. Lahiri, CFRI, Jealgora. *Fuel, Lond.*, **38** (1959), 254-55.

Conservation of metallurgical coal—N.N. Dasgupta, CFRI, Jealgora, *J. Mines, Metals & Fuels*, **7** (4) (1959), 1-3.

Plating on aluminium using an iron interlayer : Part II—Application of an iron interlayer without subsequent flash-plating of copper or brass—D.S. Tandon & T. Banerjee, NML, Jamshedpur. *Trans. Indian Inst. Metals*, **12** (1959), 45-53.

THE WEALTH OF INDIA

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SIR NEWS

VOL. 9 NEW DELHI — AUGUST 8, 1959 : SRAVANA 17, 1881 NO. 15

MEETINGS OF EXECUTIVE COUNCILS OF NATIONAL LABORATORIES AND OF RESEARCH COMMITTEES

Executive Councils

RRL, Hyderabad	Aug. 18, 1959	RRL, Hyderabad, 3.00 p.m. Chairman : Shri N. Sanjiva Reddy
CMRS, Dhanbad	Aug. 26, 1959	CFRI, Jealgora, 9.30 a.m. Chairman : A. Zaman

Research Committees

Radio Research	Aug. 19, 1959	NPL, New Delhi, 10.00 a.m. Chairman : Dr. K.S. Krishnan
Essential Oils Research	Aug. 21, 1959	CSIR, Secretariat, New Delhi, 10.30 a.m. Chairman : Shri P.A. Narielwala
Pharmaceuticals & Drugs Research	Aug. 21, 1959	CSIR Secretariat, New Delhi, 3.30 p.m. Chairman : Dr. K.A. Hamied
Physical Research	Aug. 23, 1959	CSIR Secretariat, New Delhi, 10.00 a.m. Chairman : Dr. Vikram A. Sarabhai
Chemical Research	Aug. 24, 1959	CSIR Secretariat, New Delhi, 10.00 a.m. Chairman : Dr. B.C. Guha
Joint Committee of CSIR and Indian Central Oilseeds Committee for Vegetable Oils Research	Aug. 25, 1959	Krishi Bhawan, New Delhi, 3.00 p.m. Chairman : Dr. M.S. Randhawa
Advisory Committee of Rain & Cloud Physics Research	Aug. 20, 1959	NPL, New Delhi, 2.30 p.m. Chairman : Dr. K.R. Ramanathan

Directors' Conference

A two-day Conference of Directors of national laboratories will be held at the CRRI, New Delhi, on **Aug. 25 & 26, 1959**.

Symposium on By-products of Leather Industry

A symposium on "Utilization of By-products of Leather Industry" will be held at the CLRI, Madras, in February 1960. The following aspects will be discussed :

(1) *Beam House Operations*—Used curing agents, trimmings and fleshings, hair and wool, lime sludge, lime splits, recovered grease, and used liquors.

(2) *Tanning Processes*—Spent tanning materials and tanning liquors.

(3) *Finishing Operations*—Shavings, splits, trimmings, buffing dust, recovered grease from chamois leather, residual oil products and other tanning auxiliaries.

(4) *Tannery treatment, utilization and economic disposal.*

(5) *Leather Manufacture*—Waste pickers, picking bands, roller skins, picker savers, washers, belting, trimmings, scraps, etc.

(6) *Reclaimed Leather*—Footwear and leather goods.

(7) *Carcass*

Papers for discussion at the symposium may be communicated to the Director, Central Leather Research Institute, Madras before **Nov. 30, 1959**. Abstracts of the papers may be sent in advance so as to reach him by **Oct. 30, 1959**.

Research institutions and organizations who wish to nominate their representatives to the symposium may obtain the prescribed forms from the Institute.

An exhibition of by-products of the tanning industry and products manufactured from these will be organized. Those interested may send their exhibits by the end of **December 1959**.

Exhibition of Scientific & Technical Publications

The Council of Scientific & Industrial Research is organizing, in February 1960, an exhibition of scientific and technical books published in India.

The exhibition will portray the progress of scientific and technical publications including school and college books, popular science books, journals, bulletins and encyclopaedic works in the major Indian languages and in English.

A directory (with full bibliographical details) of the publications displayed at the exhibition will be published.

Publishers, universities, research institutions and learned societies are requested to send two copies of each of their publications (free of expense) to the Publications Directorate, CSIR, before **Sept. 30, 1959**.

PERSONAL

- **Dr. D.N. Nandi** has been appointed, on promotion, Senior Scientific Officer: Grade II, CGCRI, Calcutta, with effect from May 6, 1959.
- **Dr. D. Banerjee** has been appointed Senior Scientific Officer: Grade II, NCL, Poona, with effect from July 1, 1959.
- **Dr. P. K. Dutta** has been appointed Senior Scientific Officer: Grade II, RRL, Jammu, with effect from July 18, 1959.
- **Shri B. K. Pandey** has been appointed Electrical Engineer, CGCRI, Calcutta, with effect from May 12, 1959.

(Contd. on p. 2, col. 1)

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PERSONAL

(Contd. from p. 1, col. 3)

●Shri N. B. Chatterjee has been appointed, on promotion, Junior Scientific Officer, CGCRI, Calcutta, with effect from May 6, 1959.

●The following have been appointed, on promotion, Junior Scientific Officers, NPL, New Delhi.

Shri R. C. Srivastava, Shri Kailash Chandra and Dr. S.S.S. Agarwala (w.e.f. June 8, 1959).

Shri T. R. Gopalaswami Iyengar and Dr. S. S. Chari (w.e.f. June 6, 1959).

●Shri M. Subramanian, Junior Scientific Officer, CEERI, Pilani, relinquished charge of his post with effect from July 28, 1959.

●Shri R. P. Bhargava, Junior Scientific Officer, CEERI, Pilani, relinquished charge of his post with effect from July 31, 1959.

●Dr. A. L. Kapoor, Junior Scientific Officer, NCL, Poona, relinquished charge of his post with effect from July 9, 1959.

●Shri A. K. Choudhury has been appointed Section Officer: Grade III, CGCRI, Calcutta, with effect from July 16, 1959 vice Shri H. S. Gupta transferred to CBRI, Roorkee.

* * *

●Dr. R. N. Sur, Junior Scientific Officer, CDRI, Lucknow, left for Glasgow for training in *Pharmacodynamics* under the Colombo Plan.

●Shri S. Sampath, Junior Scientific Officer, CECRI, Karaikudi, returned from U.K. after completing his training in the field of *Technology of fluorine and its component*, under the Colombo Plan.

●Shri N. Subramanian, Junior Scientific Officer, CECRI, Karaikudi, returned from U.K. after completing his training under Colombo Plan in the field of *Electrochemical studies relating to potential pH diagrams, corrosion inhibition and cathodic protection.*

* * *

●Dr. B. Mukerji, Director, CDRI, Lucknow, and Dr. K. N. Kaul, Director, NBG, Lucknow, have been nominated members of the *Medicinal Plants Committee*, Indian Council of Agricultural Research.

●Dr. B Mukerji, Director, CDRI, Lucknow, has been nominated a member of the *Animal Diseases & Pests Committee*, Indian Council of Agricultural Research.

●Dr. A. Lahiri, Director, CFRI, Jealgora, has been nominated a member of the Standing Panel of Technical Experts to advise the *Neyveli Lignite Corporation Private Ltd* and the Union Ministry of Steel, Mines and Fuel.

BRIEFS

CECRI Electroplating Course

A three-months' course in *Electroplating* organized by the CECRI, Karaikudi ended on June 15, 1959. The course was inaugurated by Dr. K.S.G. Doss, Director, CECRI. The course of lectures (118 hr) covered the theory and practice of electroplating, including fundamental principles of electro-deposition ; preparatory treatments, such as polishing, cleaning, etc. ; plating of metals in automobiles, cycles and other industries ; and anodization. The trainees also had a course of practical classes totalling 224 hr. At the end of the course, visits to the following industries at Madras were arranged : (1) T. I. Cycles, (2) Wheel & Rim Co., (3) Integral Coach Factory and (4) Best Electro-platers. The trainees were awarded certificates after successful completion of the course.

Nominees from the following industries attended the Course : (1) Indian Airlines corporation, New Delhi ; (2) Coimbatore Institute of Technology, Peelamedu ; (3) Didwania Bros (Private) Ltd, Delhi ; (4) T. V. Sundaram Iyengar & Sons Private Ltd, Madurai ; and (5) Indian Union Manufacturers Private Ltd, Calcutta.

Two courses on *Corrosion* and *Batteries* are likely to be organized by the Institute during the current year.

Training in Microwaves

The following have been selected for practical training in *Microwaves* at Agra (509, Army Base Workshop, E.M.E.). The training course which commenced on Aug 1, 1959 has been arranged by the CSIR Radio Research Committee and is of two months' duration.

1. Shri T. Aravamuthan—*Directorate General of Civil Aviation*, New Delhi.

2. Shri N. N. Kaushal—*Panjab University*, Chandigarh.

3 & 4. Sarvashri J. K. Sen & D.B. Malick—*Institute of Radiophysics and Electronics*, Calcutta.

5. Shri A.G. Desai—*Institute of Science*, Bangalore.

6. Shri A. V. Rao—*Osmania University*, Hyderabad.

Research Fellowships

The following have been awarded *CSIR Fellowships* for research on projects noted against their names :

Senior Fellowships :

1 Shri Jyotirmoy Data—*Application of vapour phase chromatography in the analysis of Indian natural oils and the essential oils present in Indian tea and studies in the possibilities of using this technique as a preparative tool* (Bose Institute, Calcutta).

2. Shri Satish Chander—*Polyamide resin from vegetable oils and ethylene dichloride* (Shri Ram Institute for Industrial Research, Delhi).

3. Shri Rabindra Nath Bagchi—*Pressure leaching of copper ores and reduction of leach solution with a reducing gas to produce copper metal* (College of Engineering & Technology, Calcutta).

4. Shri S.A. Narang—*Preparation of industrially important sesquiterpenes* (Indian Association for the Cultivation of Science, Calcutta).

5. Shri S.S. Hubli—*Investigations on surge voltage distribution in transformer windings and impulse strength of transformers* (Indian Institute of Science, Bangalore).

6. Shri V. Prabhashanker—*Evaluation of the deterioration of transformer oil during controlled ageing in the laboratory* (Indian Institute of Science, Bangalore).

Junior Fellowships :

1. Shri V.K. Kulshrestha—*Studies on Indian gums* (Jadavpur University, Calcutta).

2. Shri K. Nagaraj—*Biochemical and chemotherapeutic studies in experimental malaria* (Indian Institute of Science, Bangalore).

'Indians Abroad' Directories

The *National Register Unit*, CSIR, has published two more Directories —ST-8 and E-8—giving particulars of 92 scientists and 120 engineers.

RESEARCH IN PROGRESS

National Laboratories

CFRI, JEALGORA

Bases in Durgapur Tar—The crude bases present in Durgapur coke oven tar were isolated by fractional distillation, followed by extraction with 20 per cent sulphuric acid and neutralization with alkali; the precipitate was extracted with benzene and distilled. A yield of 1.99 per cent was obtained.

Individual bases were isolated from the crude product by fractionation and characterized by their refractive index and ultra-violet and infra-red spectra. As many as 17 bases accounting for 90 per cent of the total bases present in light and middle oil fractions have been identified.

The annual production potential for the various bases, such as pyridine α-, β- and γ- picolines, aniline, quinoline, etc. have been tentatively estimated.

CDRI, LUCKNOW

Stability of Vitamins in Liquid Preparations—The stability and bench-life of vitamins in liquid preparations containing one or more of the following bases were determined: cane sugar syrup, honey, malt, liquid glucose, ethyl alcohol, glycerol, propylene glycol and sorbitol. About 70 per cent of vitamin A, 73 per cent of thiamine and 51 per cent of ascorbic acid are retained in mixtures containing (i) glycerol (1 part), ethyl alcohol (1 part), propylene glycol (1 part) and sorbitol (2 parts); (ii) sugar syrup (2 parts), glycerol (2 parts), water (1 part); and (iii) sugar syrup (1 part) and glycerol (1 part). Preparations containing syrup (85 parts) and water (15 parts), syrup (1 part) and propylene glycol (1 part) retain ascorbic acid in presence of vitamin A and thiamine. The investigations have shown that a mixture containing sugar syrup (2 parts), glycerol (2 parts) and water (1 part) affords the best protection to vitamins.

CLRI, MADRAS

High-Frequency Titrimeter—A high frequency (40 Mc/s.) titrimeter making use of clapps oscillator circuit has been designed and assembled. Reproduceable and sharp end points are obtained by using the instrument for titrating strong acids, weak acids, strong bases and salts of weak acids at the concentration range of N/16–N/2. The instrument has been used for estimating the mole ratio of chrome and organic salts present in chrome liquors in the form of complexes.

Tanning and Shrinkage Temperature—The effect of combination tannage on shrinkage temperature of leather has been studied. It is found that leathers tanned with pyrogallol type of tanning agents when retanned with aluminium give remarkable thermal stability and the complex formed with aluminium is different from that formed with chromium and zirconium.

CECRI, KARAIKUDI

Sintered Plate Batteries—The know-how of sintered plate nickel-cadmium batteries has been worked out.

Cells of 2.5 amp./hr capacity have been fabricated and their performance characteristics studied. The capacity of the cell (in relation to size and weight) compares favourably with the imported product—P.V. Vasudeva Rao, S. Ghosh & H.V.K. Udupa.

RRL, JAMMU

Cultivation of English Dill—*Anethum graveolens* (English Dill) has been cultivated in the Laboratory farm. The seeds on distillation yield 3.13 per cent of oil containing 60—70 per cent carvone. English dill oil is preferred for use in gripe water to oil obtained from Indian dill (*Anethum sowa*) as it is free from dill apiol.

Sponsored Research

Essential Oils Research Centre, Ootacamund—Investigations on the cultural aspects of 12 essential oil plants were undertaken by the Madras Cinchona Department. The growth of plants at Naduvattam (altitude, 6,000–6,500 ft.) and at Moyar (altitude, 3,000–3,500 ft.) has been studied. *Cinnamonum camphora* and *Eucalyptus citriodora* are suited for cultivation at lower elevations and *Mentha piperita* and *Lavendula vera* for higher elevations.

Of the three species of Mentha investigated, *Mentha piperita* from the Govt. Botanical Gardens, Ootacamund and *Mentha arvenses* from the Drug Research Laboratory, Jammu were found to grow luxuriently.

E. citriodora cultivated at Moyar yielded oil of exceptionally good quality (citronellal, 41.43–56.56 per cent). *Pelargonium graveolens* (Algerian and Bourbon strains) has been successfully cultivated on a large scale from root cuttings and root-suckers separated from the mother plant.

Steroid Hormones from Sugar-cane Wax—Commercial sugar-cane wax was purified by crystallization from ethanol and separated into hard and soft waxes by repeated extraction with acetone and fractional concentration of acetone solution. The non-saponifiables from soft wax were fractionally crystallized, and one of the fractions, m.p., 125-45°C., was found to contain β-sitosterol (yield, 10 per cent of crude wax). Epidehydroandrosterone has been prepared from the sterol by the conventional method (yield, 2 per cent)—M. Krishnan & K. N. Menon, University of Madras, Madras.

Design of Cavitation Tunnels—A model tunnel consisting of a contraction cone, flow straightener, diffuser, vaned elbows, a novel type of resorber system and a special two-way pitot cylinder has been designed. The results obtained with the use of the model have been utilized for designing a water tunnel (15 in. section) with a maximum velocity of 100 ft./sec.—S.N. Govinda Rao & R. N. Varadarajan, Indian Institute of Science, Bangalore.

Adina cordifolia—A yellow colouring matter named adinin has been isolated from the wood of *Adina cordifolia* (*Haldu*). Several new characteristics of the pigment, not reported earlier, have been revealed. Adinin is an optically active compound, containing nitrogen in the form of an imino group and alcoholic hydroxyl groups. Ultra-violet and infra-red spectral analyses indicate the presence of a unique group, C-NO$_2$—L. Ramachandra Rao, Andhra University, Waltair.

RESEARCH PAPERS

INTERACTION OF IMIDAZOLE WITH COBALT (II)—R. Mathur & Hira Lal, NCL, Poona. *J. phys. chem.*, **63** (1959), 439.

HYDROGEN ION EQUILIBRIA AND THE INTERACTION OF Cu^{II} and Co^{II} WITH BOVINE SERUM ALBUMIN—Hira-Lal, NCL, Poona. *J. Amer. chem. Soc.*, **81** (1959), 844.

RADIOACTIVE VITAMIN B_{12} URINARY EXCRETION IN ANEMIA, NORMAL VALUES AND THEIR MODIFICATION IN DISEASE—S. Kaul, D.N.S. Rao & N.R. Krishna, NCL, Poona. *Indian J. med. Sci.*, **13** (1959), 179-87.

DIFFRACTION OF LIGHT BY ULTRASONIC WAVES—OBLIQUE INCIDENCES—S. Parthasarathy & C.B. Tipnis, NPL, New Delhi. *Nature, Lond.*, **182** (1958), 1083-84.

STUDIES IN ULTRASONIC PROPAGATION IN MIXTURES OF ETHYL ALCOHOL AND WATER—S. Parthasarathy & M. Pancholy, NPL, New Delhi. *Z. phys. Chem.*, **10** (1958), 453-55.

EVALUATION OF CLAYS SUITABLE FOR PENCIL MANUFACTURE—B. R. Marathe, T.R. Gopalaswamy Iyenger, K.C. Agarwal & G.D. Joglekar, NPL, New Delhi. *ISI Bull.*, **10** (1958), 199-203.

PLATING ON ALUMINIUM USING AN IRON INTER-LAYER : Part III—USE OF IRON INTER-LAYER, DEPOSITED FROM FERRIC CHLORIDE SOLUTION AT TEMPERATURE LOWER THAN 95°C. AND WITHOUT FLASH PLATING OF COPPER OR BRASS—D.S. Tandon & T. Banerjee, NML, Jamshedpur. *Trans. Indian Inst. Metals*, **12** (1959), 55-67.

POLARISATION AND POLISHING STUDIES ON COPPER IN A HULL CELL—Indra Sanghi & V.R. Ramanathan, CECRI, Karaikudi. *Proc. Indian Acad. Sci.*, **49A** (1959), 281-92.

INFLUENCE OF SURFACE ACTIVE AGENTS ON THE SPECTROPHOTOMETRIC DETERMINATION OF pH—Indra Sanghi & N.V. Parthasarathy, CECRI, Karaikudi. *Proc. Indian Acad. Sci.*, **49A** (1959), 144-50.

REACTIVITY OF LOW TEMPERATURE COKES AND CHARS—S.P. Nandi, K.A. Kini & A. Lahiri, CFRI, Jealgora. *Brennst Chemie*, **40** (1959), 85-87.

PATENTS & PROCESSES

Applications Filed

INDIA

68377 : *Improvements in or relating to the protection of metallic surfaces against atmospheric corrosion*—K.S. Rajagopalan & G. Ramaseshan, CECRI, Karaikudi.

68401 : *Improvements in or relating to the manufacture of bricks or blocks out of ceramic mixes*—H.V. Bhaskar Rao, H.P. Srinivasamurthy & R.C. Verma, NML, Jamshedpur.

U.S.A.

820,584 : *New process for the production of 4-hydroxycoumarin and its derivatives*—V.R. Shah, J.L. Bose & R.C. Shah, NCL, Poona.

Application Accepted

FRANCE

P.V. 764147 : *A process for the preparation of azelaic acid semi-ester suitable for making civetone dicarboxylic acid*—U.G. Nayak, K.K. Chakravarti & S. S. Bhattacharyya, NCL, Poona.

Applications Sealed

INDIA

59658 : *An electric heater*—C.R. Gupta, NPL, New Delhi.

60556 : *A new method for the manufacture of spherical crystals of alkali halides*—G.I. Finch, R.K. Shukla & D.J. Mehta, CSRI, Bhavnagar.

60805 : *Improvements in and relating to the electrolytic reduction of* m-*dinitrobenzene to 2:4-diaminophenol*—G.S. Subramanian, H.V.K. Udupa & B.B. Dey, CECRI, Karaikudi.

60827 : *Isolation of a therapeutically active antibiotic and antiviral principle from* Withania somnifera (*Solanaceae*)—P. A. Kurup, CDRI, Lucknow.

61981 : *A process for making completely stabilized dolomite refractories*—M. Ramakrishna Rao, P.C. Sen & H.V. Bhaskar Rao, NML, Jamshedpur.

62261 : *A temperature sensitive ceramic composition having medium permittivity and retraceable characteristics*—T.V. Ramamurti, C.V. Ganapathy, R. Krishnan, A. Ahmad & K. Vaitheswaran, NPL, New Delhi.

62939 : *Improvements in or relating to curing catalyst for the treatment of textile materials with aminoplast resins*—V.B. Chipalkatti, K.V. Ramalingam & N.V. Sattur, Shri Ram Institute for Industrial Research, Delhi.

63298 : *Improvements in or relating to vats for making hand-made paper*—G.S. Chowdhury, M.K. Chary, S.A. Saletore & S. H. Zaheer, RRL, Hyderabad.

63719 : *A process for the production of alkyl eugenols*—S. Mahboob, C.C. Reddy & S.H. Zaheer, RRL, Hyderabad.

64226 : *Preparation of predigested protein rich pasty products for fortifying and seasoning food preparations*—V. Subrahmanyan, B.S. Lulla & D.S. Johar, CFTRI, Mysore.

U.K.

5374/56 : *Improvements in or relating to the removal of organic sulphur from industrial gases*—N.G. Basak, A.C. Mazumdar & A. Lahiri, CFRI, Jealgora.

PAKISTAN

935/58 : *Improvements in or relating to the refining and the utilization of cotton seed products*—T.R. Seshadri & K. Chander, University of Delhi, Delhi.

Processes Ready for Exploitation

ELECTROLYTIC MANGANESE DIOXIDE

The *National Metallurgical Laboratory*, Jamshedpur has evolved a process (Indian Patent No. 47982) for producing battery-grade (99.99 per cent purity) manganese dioxide from low-grade manganese ores. The process has been satisfactorily operated on a pilot plant scale. It consists in producing acidic manganese sulphate solution from manganese ores and electrolyzing it to yield manganese dioxide.

Most of the plant and equipment required for its manufacture can be fabricated in India.

Parties desirous of taking up the commercial manufacture of the product may write to the Secretary, National Research Development Corporation, Mandi House, New Delhi-1.

FOUNDRY CORE OIL

The details of the process for the manufacture of Foundry Core Oil (Ind. Pat. No. 65542) developed by the *National Chemical Laboratory*, Poona are available free of charge from the Director, NCL, Poona.

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R. N. 4512 57

CSIR NEWS

VOL. 9 NEW DELHI — AUGUST 22, 1959 : SRAVANA 31, 1881 NO. 16

MEETINGS

A meeting of the *Executive Council*, CRRI, New Delhi, will be held at the Institute on Aug. 28, 1959 at 10.00 a.m. Prof. M.S. Thacker, Director-General, Scientific & Industrial Research, will preside.

A meeting of the *Executive Council*, CMRS, Dhanbad, will be held at CFRI, Jealgora, on Sept. 3, 1959 at 2.30 p.m. Shri A. Zaman will preside.

A meeting of the *Executive Council*, CECRI, Karaikudi, will be held at the Institute on Sept. 6, 1959 at 10.30 a.m. Shri C. Subramaniam, Minister for Finance and Education, Government of Madras, will preside.

A meeting of the *Geological & Mineralogical Research Committee* will be held at the Conference Room of the CSIR Secretariat, New Delhi, on Aug. 29, 1959, at 10.30 a.m. Dr. D.N. Wadia will preside.

A meeting of the *Joint Committee of CSIR and the Indian Central Oilseeds Committee for Vegetable Oils Research* will be held at Krishi Bhawan, New Delhi, on Aug. 24, 1959 at 3.00 p.m. Dr. M.S. Randhawa will preside.

Prof. M.S. Thacker

Prof. M.S. Thacker, Director-General, Scientific & Industrial Research, and Secretary, Ministry of Scientific Research and Cultural Affairs returned to Delhi from his tour abroad on July 31, 1959.

PERSONAL

●SHRI PRAKASH NARAIN has been appointed, on promotion, Personnel Officer (Technical), National Register Unit, CSIR, with effect from Aug, 12, 1959.

●SARVASHRI A.N. KAPOOR & H.K. CHAKRABORTY have been appointed, on promotion, Senior Scientific Officers : Grade I, NML, Jamshedpur, with effect from July 21, 1959.

●SHRI M.P. MENON has been appointed Senior Scientific Officer : Grade I, NML, Jamshedpur, with effect from Aug. 1, 1959.

●The following officers have been appointed, on promotion, Senior Scientific Officers : Grade II, NML, Jamshedpur, with effect from July 21, 1959 : SARVASHRI R. CHOUBEY, SEWA SINGH, R.C. VERMA, HAWALDAR SINGH, R.A. SHARMA & DR. Y.N. TREHAN.

●SARVASHRI M.C. KUNDRA & R.N. MISRA have been appointed, on promotion, Junior Scientific Officers, NML, Jamshedpur, with effect from July 21, 1959.

●The following have been appointed, on promotion, Junior Scientific Officers, CECRI, Karaikudi, with effect from the dates given against their names : SARVASHRI U.H. NARAYANAN & M.G. POTDAR (July 22, 1959) ; SARVASHRI G.S. SUBRAMANIAN & R. SRINIVASAN (July 27, 1959).

●SHRI B.S. GUPTA has been appointed Accounts Officer, CMERI, Durgapur, with effect from July 7, 1959.

* * *

●SHRI A. BOSE, Planning Officer, Birla Industrial & Technological Museum (BITM), Calcutta left for Stockholm on June 27, 1959 to study organizational methods for industrial, technological and scientific museums at Munich, Vienna, Italy, France and U.K.

●DR. R. L. THAKUR, Senior Scientific Officer, CGCRI, Calcutta, will look after the duties of the Planning Officer of the BITM during the absence of Shri A. Bose in addition to his duties in CGCRI.

●SHRI A.K. LAHIRI, Junior Scientific Officer, NML, Jamshedpur, left for U.K. for training in *Corrosion Research and Alloys* under the Colombo Plan.

●DR. A. B. CHATTERJEE, Asst. Director, NML, Jamshedpur, returned from West Germany and resumed duties on July 28, 1959. Dr. Chatterjee studied the operation and maintenance of *Low-Shaft Furnace Pilot Plant* during his stay in West Germany.

●SHRI D. S. TANDON, Senior Scientific Officer : Grade II, NML, Jamshedpur, who was in U.K. for training in *Electroplating* under the Colombo Plan, resumed duty on June 25, 1959.

(*Contd. on p. 2, col. 3*)

OGICAL RESEARCH
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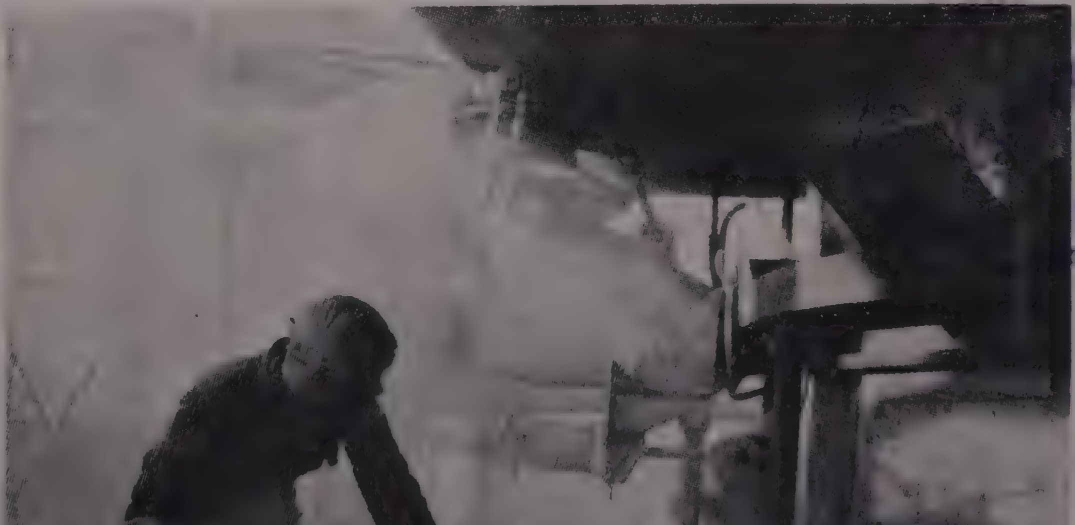


NML, JAMSHEDPUR—Pig iron being tapped from the low-shaft furnace pilot plant

BRIEFS

Patented Processes

The know-how and operational techniques of the following four patented processes were demonstrated at the *National Metallurgical Laboratory*, Jamshedpur from July 31 to August 7, 1959 : (*i*) Electroplating of metals on aluminium or its alloys ; (*ii*) Metallization of non-conductors ; (*iii*) Chemical polishing of aluminium ; and (*iv*) Brass plating from non-cyanide bath. Shri J. J. Ghandy, Chairman Executive Council, NML, inaugurated the function. Representatives of about twenty small-scale metal industries and some large-scale industries, such as the *Hindustan Aircraft Ltd.*, *Aluminium Corporation of India*, *Tata Locomotive and Engineering Co.*, Jamshedpur attended the demonstrations.

Technical Manpower

The July 1959 issue (No. 7) of the Technical Manpower Bulletin published by the National Register Unit of the CSIR contains a note on Geo-Scientists—pin-pointing the role of geo-scientists in the country's scientific advancement, reviews the qualifications acquired abroad by Indian scientists and gives an analysis of the sectors of employment for trained geologists. It also provides employment data in regard to geologists and geophysicists in various establishments.

The Road Ahead

The *Central Road Research Institute* has been engaged in studying the problem of reducing the cost of road construction and at the same time making the roads more durable and more safe. Some of the results of the examination are outlined in a 16-page illustrated handy pamphlet, entitled *The Road Ahead.* This pamphlet is available on request from the Central Road Research Institute, New Delhi.

Research Fellowships

The following have been awarded *CSIR Fellowships* for research on projects noted against their names :

Senior Fellowships :

1. Shri B.P. Sen—*Hydrochrysofluorene ring system* (Jadavpur University, Calcutta).

2. Shri S.R. Goel—*Development of polyurethanes for foam rubbers* (Shri Ram Institute for Industrial Research, Delhi).

3. Shri R.K. Kochhar—*Preparation of plasticizers and stabilizers for poly (vinyl chloride) resins from vegetable oil fatty acids* (Shri Ram Institute for Industrial Research, Delhi).

4. Shri K.L. Mallick—*Resonance energy transfer between flourscent molecules in condensed system* (Jadavpur University, Calcutta.

5. Dr. (Mrs.) C. Santhamma—*Nuclear quadrupole moments* (Andhra University, Waltair).

Junior Fellowships :

1. Shri S.K. Basu—*Study of bacterial production of sulphur from sulphates, etc.* (Jadavpur University, Calcutta).

2. Shri S.V. Hupnikar & Miss S.R. Dhonde—*Studies in haemagglutinins in Indian plants* (Institute of Science, Bombay).

3. Shri W.K. Kawishwar—*Adrenal steroids and vitamin C in relation to diabetes* (Bikaner Medical College, Bikaner).

4. Shri S.S. Sidhu—*Studies on the mangrove flora of India* (Central Botanical Laboratory, Allahabad).

5. Shri A.K. Chattopadhay—*Studies on the development of heat resistance of bacterial spores* (Jadavpur University, Calcutta).

6. Shri J. Dakshinamurthy—*Production of optical flats* (Madras Institute of Technology, Madras).

RESEARCH PAPERS

TERT. OCTYL MERCAPTAN AS CHAIN TRANSFER AGENT IN EMULSION POLYMERIZATION—K. L. Mallik, College of Engineering & Technology, Calcutta. *Naturwissenschaften*, **45** (1958), 385.

ESTIMATION OF METHACRYLIC ESTERS BY NON-AQUOUS TITRATION—K. L. Mallik & M. N. Das, College of Engineering & Technology, Calcutta. *Chem. & Ind.*, (1959), 162.

UNLIKE MOLECULAR INTERACTIONS AND PROPERTIES OF GAS MIXTURES—K. P. Srivastava, Lucknow University, Lucknow. *J. chem. Phys.*, **28** (1958), 543.

MUTUAL DIFFUSION OF PAIRS OF RARE GASES AT DIFFERENT TEMPERATURES—B. N. Srivastava & K. P. Srivastava, Lucknow University, Lucknow. *J. chem. Phys.*, **31** (1959), 984.

IN PARLIAMENT

Pilot Plant Development — The Union Minister for Scientific Research and Cultural Affairs informed the Rajya Sabha that the French Government had agreed to arrange practical training in pilot plant development for a few scientists of CSIR laboratories. French experts, would later assist in setting up a pilot plant development cell in India under the Council.

The entire expenditure in connection with the deputation of Indian scientists and assignment of French experts would be borne by the French Government. Necessary action to avail of these facilities is being taken by the Council—(Aug. 12, 1959).

Basic Magnesium Carbonate—In reply to a question by Shri S. C. Samanta and Shri Subodh Hansda in the Lok Sabha, the Union Minister for Scientific Research and Cultural Affairs stated that negotiations between the National Research Development Corporation and industry are still continuing for the commercial utilization of a process developed by the Central Salt Research Institute, Bhavnagar, for producing light basic magnesium carbonate. The estimated cost of production of basic magnesium carbonate is Rs. 936 per ton as against the imported price of Rs. 980 per ton.—(Aug. 13, 1959).

PERSONAL

(*Contd. from p. 1, col. 3*)

●Dr. Atma Ram, Director, CGCRI, Calcutta, has been nominated a member of the Advisory Committee of the *Harcourt Butler Technological Institute*, Kanpur.

●Dr. A. Lahiri, Director, CFRI, Jealgora, has been nominated a member of the Advisory Panel of Experts to advise the Union Ministry of Education on the selection of institutions in foreign countries to which Indian students may be deputed for higher studies.

●Dr. K.S.G. Doss, Director, CECRI, Karaikudi, has been nominated a member of the *Committee of Experts for Basic Sciences*, Union Ministry of Education.

●Shri V. Cadambe, Director, CMERI, Durgapur, has been nominated a member of the Committee

(*Contd. on p. 4, col. 3*)

RESEARCH IN PROGRESS

National Laboratories

NML, JAMSHEDPUR

Low-Shaft Furnace—Pig iron has been produced in the low-shaft furnace pilot plant in operation at the Laboratory. The furnace charge consists of non-coking coal from Raniganj coalfields (moisture, 6–9 ; ash, 12–14, volatile matter, 32–34; and fixed carbon, 42–48 per cent), lime-stone and iron ore. The pig iron produced has the following average composition : C, 2.4–3.8 ; Si, 2–3 ; and sulphur 0.020–.08 per cent. Optimum conditions for the production of pig iron are being worked on the basis of detailed studies on the volume, pressure and temperature of the blast.

Cladding of Aluminium on Steel—A process for cladding aluminium on mild steel has been developed. The process consists in preparing an aluminium-mild steel-aluminium block from sheets of suitable thickness and subjecting the block to a schedule of cold and hot-rolling followed by thermal treatment. Mechanical tests and metallographic examinations have revealed that the clad steel sheets have good surface finish, good bond strength and deep drawing properties. Work is in progress on the welding characteristics of clad steel.

Aluminium clad steel is used for applications where corrosion resistance and mechanical strength are required, e.g. in chemical, automotive and marine industries and in fabricating rail road cars, refrigerators and domestic appliances.

CDRI, LUCKNOW

Use of Shellac in Tinctures—Shellac can be substituted for cochineal as a colouring agent in Tinctura Cinchonae Composita (*Tinct. Chinchon Co.*) ; it is not satisfactory for use in Tinctura Cardamoni Composita (*Tinct. Cardam. Co.*).

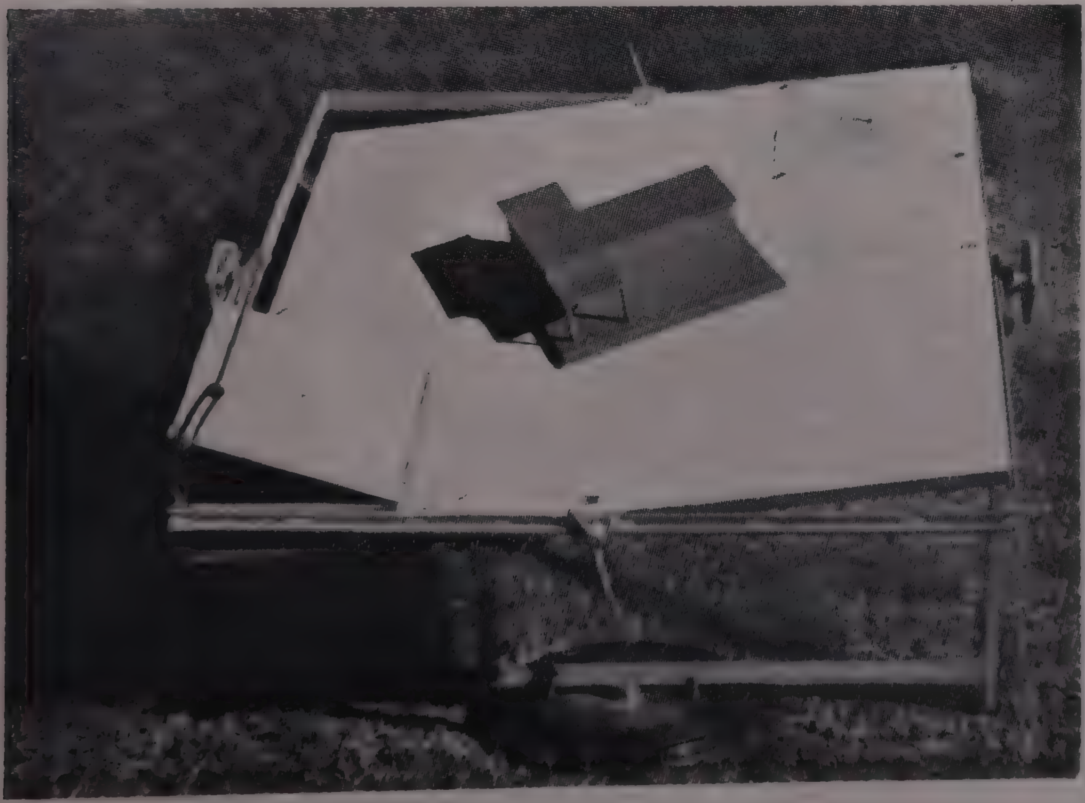
CBRI, ROORKEE

Solar Shadowgraph — A simple device for visually examining the shadow pattern of buildings at stated times has been designed.

It consists of a plane table which can be tilted to any inclined position. A chart with a central pin normal to the board is fixed at one corner of the table and a model of the house is mounted at the centre. The table is placed in sunlight and tilted so that the shadow of the tip of the pin coincides with the point on the chart representing the required time and day. The corresponding shadow pattern can then be seen round the model of the house orientated with reference to the directions marked on the table itself. A separate chart is used for each locality ; charts for latitudes from 8° to 35° N. have been prepared.

An alternative arrangement is to provide on the table a tilting board on which a single chart with the pin is mounted. The board is tilted and fixed at an angle to the table equal to the latitude of the locality. This arrangement requires only a single chart for all localities and is more elegant in use. But the set-up using separate charts is simpler and easier to make.

The shadowgraph is useful for architects for designing shading devices for windows in building construction.



CBRI, ROORKEE—Solar shadowgraph

CSRI, BHAVNAGAR

Potassium Sulphate from Sea Bitterns—A process for the recovery of potassium salts from the mixed salts obtained during the solar evaporation of sea bitterns has been worked out. The process is based on the precipitation of potassium as bitartrate employing tamarind pulp extract as precipitant and suitably treating the bitartrate to recover potassium as chloride or sulphate. Conditions have been worked out for the conversion of potassium bitartrate to sulphate by reaction with gypsum (yield 95 per cent). The resulting calcium tartrate may be used for the manufacture of tartaric acid.

Sponsored Research

Electrolyte Imbalance and Hypertension—The action of sodium, potassium and calcium ions on the smooth muscle of arterioles has been examined in an attempt to ascertain the relation between electrolyte imbalance and hypertension. The following results were obtained : (i) sodium has a contractile and potassium, a relaxing effect on the contractile mechanism ; (ii) isotonic solutions of calcium chloride produce a strong irreversible contraction of the arterioles indicating that calcium may be responsible for hypertension ; (iii) cholesterol increases the tone of blood vessels of dog's hind limbs ; and (iv) the effect on the electrical activity of smooth muscle can be studied in the absence of ions in the external medium—DR. INDERJIT SINGH, Medical College, Agra.

PATENTS & PROCESSES

Applications Filed

68173 : *An improved process for the manufacture of ethylene dichloride*—Satish Chander, R. K. Bhatnagar & N.R. Kuloor, Shri Ram Institute for Industrial Research, Delhi.

68611 : *A new method of generating electrical power from the atmosphere*—A.U. Momin, NCL, Poona.

68680 : *Improvements in low temperature carbonization practice as related to narrow continuous vertical retorts*—K.Y. Shrikhande, H. C. Chakrabarti, V. V. Rao, N. N. Das Gupta, S. K. Das Gupta, S. Chatterjee & A. Lahiri, CFRI, Jealgora.

Applications Accepted

62890 : *A new process for the production of 4-hydroxycoumarin and its derivatives*—V.R. Shah, J.L. Bose & R.C. Shah, NCL, Poona.

62938 : *A process to produce dense carbon aggregates from carbonaceous materials of varied volatile contents*—H. P. Srinivasamurthy & P. Prabhakaram, NML, Jamshedpur.

Processes Ready for Exploitation

DIOSGENIN FROM DIOSCOREA TUBERS

The *Regional Research Laboratory, Jammu* has developed a process (Indian Pat. No. 64352) for the extraction of diosgenin from *Dioscorea deltoidea* (Dioscorea tubers). Diosgenin is the starting material for the synthesis of cortisone and other steroidal hormones.

The process has been studied on pilot plant scale and a yield of 3.7 per cent of diosgenin with an extraction efficiency of 90–95 per cent has been achieved.

Parties interested in the commercial utilization of the process may correspond with the Secretary, National Research Development Corporation, Mandi House, New Delhi-1.

BACTERIAL DIASTASE

Conditions for the production of bacterial diastase from selected strains of *Bacillus subtilis* and *Bacillus mesentericus* have been worked out at the *National Chemical Laboratory*, Poona (Indian Pat. No. 66096).

The diastase produced has been tested in some of the leading textile mills and reported to compare favourably with imported desizing agents. The product is stable on storage.

Parties interested in taking up the commercial production of bacterial diastase may correspond with the Secretary, National Research Development Corporation, Mandi House, New Delhi-1.

Process Available Free for Exploitation

FLAT OR ARCHED ROOFS

Details and working data for the construction of Flat or Arched Roofs according to a process developed by the *Central Building Research Institute*, Roorkee (Indian Pat. No. 54361) are available for commercial development, free of charge, from the Secretary, National Research Development Corporation, Mandi House, New Delhi-1.

Process Leased Out

MULLITE REFRACTORIES

The process for the production of mullite refractories from kyanite, developed by the *National Metallurgical Laboratory*, Jamshedpur (Indian Pat. No. 58553) has been leased out for commercial development to *Jauhar Firebricks & Refractory Works Private Ltd.*, Mugma.

PERSONAL

(*Contd. from p. 2, col. 3*)

constituted by Heavy Engineering Corporation Ltd., New Delhi to examine the *Project Report on Heavy Machine Building Plant* to be established in Hatia near Ranchi.

●SHRI S. BAGCHI, Asst. Director-in-charge, CMRS, Dhanbad, has been nominated a member of the Technical Committee on *Mine Ventilation, Lighting and Mine Plans*, Union Ministry of Labour & Employment.

●The following officers have been nominated members of the Standing Committee for *Machinery Manufacture for Engineering Industries*, Union Ministry of Commerce & Industry: SHRI S. BAGCHI, Asst. Director-in-charge, CMRS, Dhanbad; and SHRI S.K. DASGUPTA *or* SHRI S. CHATTERJEE, Asst. Directors, CFRI, Jealgora.

●DR. M.K. CHAKRAVARTY, Asst. Director, CMRS, Dhanbad, has been nominated a member of the *Manganese Poisoning Enquiry Committee*, Union Ministry of Labour.

●DR. J. S. AGGARWAL, Asst. Director and SHRI M. S. SIVASAMBAN, Senior Scientific Officer, RRL, Hyderabad, have been nominated Principal and Alternate members respectively of the *Paints and Allied Products* Sub-Committee, Indian Standards Institution.

National Chemical Laboratory, Poona

THERMISTORS to suit different requirements of temperature resistance, sensitivity, power dissipation and time constant in variety of sizes and shapes (beads, rods, pellets and flakes) are available in limited number.

Requests should be addressed to:

The Asst. Director, Physical Chemistry Division
National Chemical Laboratory, Poona

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THE ROAD AHEAD

An illustrated pamphlet outlining the activities of the Central Road Research Institute in their efforts to solve various road problems in India.

Copies available from:

The Director, Central Road Research Institute
Mathura Road, New Delhi

Printed at Asia Press, Delhi-7, and Published by the Council of Scientific & Industrial Research, Old Mill Road, New Delhi-1.

R. N. 4512/57

CSIR NEWS

VOL. 9 NEW DELHI — SEPT. 26, 1959 : ASVINA 4, 1881 NO. 18

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PILOT PLANTS IN METALLURGICAL RESEARCH

A symposium on 'Pilot Plants in Metallurgical Research' will be held at the *National Metallurgical Laboratory*, Jamshedpur, in February 1960. The symposium, besides reviewing the progress of pilot plant work in India, will provide a valuable opportunity for the exchange of technical information and 'know-how' among scientists and metallurgists from various parts of the world participating in the symposium.

The symposium will broadly cover the following aspects.

(1) Pilot plant projects in relation to laboratory scale investigations and industrial scale implementation.

(2) Importance of pilot plants investigations in relation to assessment of overall economics of the processes, production costs, etc. as a guide to industrial scale implementation.

(3) Present set-up and outline of pilot plant projects in metallurgical research and industries in India.

(4) Outline of important pilot plant projects relating to metallurgical research and development operating in different parts of the world.

(5) Pilot plants relating to mineral dressing and thermal and chemical beneficiation of low-grade ferrous and non-ferrous ores.

(6) Pilot plants based on pyrometallurgical operations such as Low Shaft Furnace for smelting of iron ores, oxygen steel making methods, direct reduction of iron ore, and others relating to technology of iron and steel production.

(7) Electro-metallurgical pilot plants based on electro-winning of metals.

(8) Pilot plants relating to the production of new refractories and their market evaluation in industry.

(9) Pilot plants relating to hot and cold working of ferrous and non-ferrous metals.

(10) Pilot plants relating to finishing of metals such as anti-corrosive hot dip coating process, aluminizing, decorative-cum-protective chemical processes, etc.

(11) Materials of construction for metallurgical pilot plants including equipment, instrumentation and components and their indigenous availability.

(12) Cost accounting and overall assessment of the economics of applied processes in terms of capital and operational costs, statistical analyses and assessment of pilot plant test data, etc.

Joint Committee of the BSIR

The Vice-President, Council of Scientific & Industrial Research, has been pleased to accord approval to the constitution of a *Joint Committee* of the *Board of Scientific & Industrial Research* with the following members :

LALA SHRI RAM (*Chairman*); DIRECTOR-GENERAL, SCIENTIFIC & INDUSTRIAL RESEARCH; SHRI J. J. GHANDY; DR. B. C. GUHA; DR. K. A. HAMIED; SHRI M. HAYAT; SHRI A. N. KHOSLA; DR. D. S. KOTHARI; PROF. P. MAHESHWARI; SHRI KARNAIL SINGH; DR. C. G. PANDIT; SHRI M. S. RANDHAWA; and DR. VIKRAM A. SARABHAI (*Members*).

MEETINGS

A meeting of the *Joint Committee* of the *Board of Scientific & Industrial Research* will be held in the Conference Room of the CSIR Secretariat, New Delhi, on Oct. 15, 1959 at 10.00 a.m.

A meeting of the *Board of Scientific & Industrial Research* will be held in the Conference Room of the Ministry of External Affairs, South Block, Central Secretariat, New Delhi, on Oct. 16, 1959 at 9.30 a.m.

A meeting of the *Governing Body* will be held in the Conference Room of the Ministry of External Affairs, South Block, Central Secretariat, New Delhi, on Oct. 17, 1959 at 9.30 a.m.

PERSONAL

●SHRI NAU NIHAL SINGH, Administrative Officer, CRRI, New Delhi, has been appointed Deputy Secretary, CSIR Secretariat, New Delhi; he joined duty on Sept. 23, 1959.

●SHRI R.P. PATHAK, Officiating Deputy Secretary, CSIR Secretariat, New Delhi, has been reverted as Under Secretary, with effect from Sept. 23, 1959.

●SHRI KHARATI LAL, Under Secretary, CSIR Secretariat, has been transferred as Administrative Officer, CRRI, New Delhi, with effect from Sept. 23, 1959.

●DR. S.K. BARAT, Asst. Director, CLRI, Madras, is looking after the duties of the Director, CLRI, as Asst. Director-in-charge during the period of deputation abroad of Dr. Y. Nayudamma.

●SHRI M.S. BEDI has been appointed Civil Engineer, NCL, Poona, with effect from June 8, 1959.

(*Contd. on p. 4, col. 1*)

BRIEFS

Holland Memorial Lecture

Prof. M.S. Thacker, Director-General, Scientific & Industrial Research and Secretary, Ministry of Scientific Research & Cultural Affairs delivered the Forth Sir Thomas Holland Memorial Lecture of the Mining, Geological and Metallurgical Institute of India at Calcutta on Sept. 12, 1959.

In his lecture, Prof. Thacker referred to recent developments in geophysical explorations and prospecting and emphasized the need for intensifying work on mineral exploration in various parts of the world, which have not been adequately surveyed. He pointed out the need for rethinking on various aspects of mineral exploration and use, particularly, geological mapping, assessment of reserves, exploration techniques, mining technology, judicious use of metals, and recovery of scrap metal. He reviewed the advances made in India in the field of mineral development.

Food Technology in India

Some Aspects of Food Technology in India is the title of a book brought out by the CFTRI, Mysore on the occasion of the FAO Regional Seminar on Food Technology for Asia and the Far East held during August 1959.

The 160-page publication contains 26 articles dealing with chemistry, technology, storage and preservation, packaging and transportation of fruits, vegetables, foodstuffs, preserves and spices. Equipment for food industries, their design and manufacture in India has been dealt with in one of the articles. Copies of the publication are available from the Director, Central Food Technological Research Institute, Mysore.

Black Coal and Golden Eggs

An illustrated brochure entitled, Black Coal and Golden Eggs, portraying the activities and achievements of the *Central Fuel Research Institute*, Jealgora, has been recently published. The 24-page brochure outlines the results of investigations carried out at the Institute, with particular reference to the conservation and rational utilization of coal. The brochure is available on request from the Publications Directorate, CSIR, New Delhi.

Manufacture of Carbon Black

The *Central Fuel Research Institute*, Jealgora has brought out a report on the "Possibilities of Carbon Black Manufacture in India".

The report presents the results of various investigations on the production of channel type carbon black from anthracene oil residues of coal tar fractions. On the basis of the data, an experimental plant (capacity, 1 cwt./day) is under fabrication for establishing the technical feasibility of the process.

BSIR Membership

The following have been nominated members of the *Board of Scientific & Industrial Research :*

1. Dr. D.N. Wadia, Geological Adviser to the Government of India, Department of Atomic Energy, New Delhi.
2. Shri Karnail Singh, Member (Engineering) Railway Board, New Delhi *vice* Shri P.C. Mukerjee, ex-Chairman, Railway Board.

Research Fellowships

The following have been awarded *Junior Research Fellowships* for work at the *Regional Research Laboratory*, Jammu in the subjects noted against their names :

1. Smt. Livlin Malik—*Artificial culture of ergot on rye plant in Jammu & Kashmir State.*
2. Shri Bal Krishna Kaul—*Influence of the growth hormones on the culture of medicinal plants.*
3. Shri Yoginder Nath—*Fagopyrum rutin bearing species and Indian Lobelia species.*

Research Schemes

The Director-General, Scientific & Industrial Research, has approved the transfer of the following research schemes, being worked under the guidance of Prof. P. S. Sarma, from the Department of Biochemistry, Madras University to the *Department of Biochemistry, Indian Institute of Science*, Bangalore : (1) *Metabolism of trace elements and phosphorproteins*; and (2) *Preservation of neera.*

* * *

The research scheme, *Optical resolution of synthetic and natural products* by Dr. K. A. Thakar has been transferred with staff from the Vithalbhai Patel Mahavidyalaya, Vallab Vidhyanagar to the *Gujrat University*, Ahmedabad.

* * *

The research scheme, *Studies of electro-chemical etching of metal and alloy crystals* by Dr. P. G. Deo, Panjab Engineering College, Chandigarh, has been terminated with effect from August 31, 1959.

In Parliament

Jet Engine Research Centre—Shri Humayun Kabir, Union Minister for Scientific Research & Cultural Affairs, outlined in the Lok Sabha the progress made in respect of the scheme of opening a research centre for the development of jet engines in co-ordination with the Ministry of Defence and the CSIR. The Minister was replying to a question by Prof. D.C. Sharma.

The Gas Turbine Research Centre at Kanpur, Shri Kabir said, formally opened on May 3, 1959 has undertaken the design of a gas turbine engine as an educational project. Other research studies at the Centre include jet assisted take-off and design of pulse jet engines (Sept. 8, 1959)

RESEARCH PAPERS

THE CONSTITUTION OF ERYTHROLACCIN—K. G. Dave, B.S. Joshi, A.V. Patwardhan & K. Venkataraman, NCL, Poona. *Tetrahedron Lett.*, 6 (1959), 22-25.

INDIAN SLAGS AS AGGREGATE FOR LIGHT WEIGHT CONCRETE—S.K. Chopra & Kishan Lal, CBRI, Roorkee. *Indian Concr. J.*, **33** (1959), 270.

The following research papers published in the *CSIR News*, Vol. 9, No. 16, p. 2 have appeared from the *Indian Association for the Cultivation of Science*, Calcutta and not from the Lucknow University, Lucknow.

UNLIKE MOLECULAR INTERACTIONS AND PROPERTIES OF GAS MIXTURES—K.P. Srivastava. *J. chem. Phys.*, **28** (1958), 543.

MUTUAL DIFFUSION OF PAIRS OF RARE GASES AT DIFFERENT TEMPERATURES—B.N. Srivastava & K.P. Srivastava. *J. chem. Phys.*, **31** (1959), 984.

RESEARCH IN PROGRESS

National Laboratories

NML, JAMSHEDPUR

Carbon Free Ferro-chrome—Conditions have been standardized for the production of low-carbon or carbon-free ferro-chrome by aluminothermic process. The use of various energisers, like potassium chlorate, potassium dichromate and chromic acid, in the production of ferrochrome has been studied. Chromic acid has been found to be the best energiser as it not only provides the necessary heat but also enriches the alloy.

CGCRI, CALCUTTA

Soldering of Porcelain Insulators—Investigations have been carried out to find out suitable methods for soldering electrical lead wire on porcelain insulators. Conditions for depositing suitable copper coatings on porcelain, which serve as base for soldering, have been worked out. The copper coatings obtained on porcelain have satisfactory electrical conductivity and adherence.

CLRI, MADRAS

Picking Band Leather—A method has been evolved in imparting mould resistance to picking band leather. The method consists in treating the leather in soak liquor containing 0.25 per cent of *p*-nitrophenol followed by another treatment in a bath of soak liquor containing 1 per cent *p*-nitrophenol.

CBRI, ROORKEE

Prestressed Concrete Trusses—A 120 ft. long pavilion with a seating capacity of 500 persons has been designed by the Institute for the Bengal Engineering Centre, Roorkee, as part of a field experiment on prestressed concrete trusses. The roof of the pavilion is supported on prestressed concrete cantilever trusses of 32 ft. span resting on prestressed concrete columns spaced 12 ft. apart. The load test carried out on one of the truss-column assemblies showed that the first crack occurred at 2.2 times the design load.

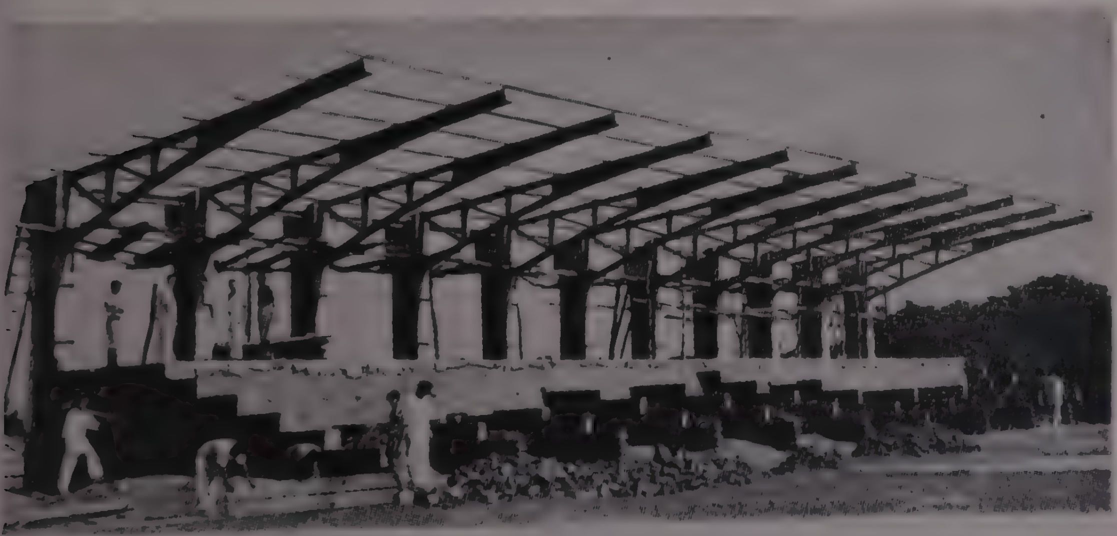
RRL, HYDERABAD

Production of Alkyl Eugenols—An economic method for the production of alkyl eugenols by direct alkylation of cinnamon leaf oil or clove oil instead of starting from eugenol has been worked out. Alkylation is carried out with usual alkylating agents like alkyl halides or alkyl sulphates in 3-10 per cent aqueous solution—SARDAR MAHBOOB, C.C. REDDY & S.H. ZAHEER.

Sponsored Research

Neera Preservation—Field experiments carried out with *neera* obtained from palmyra and date palms have confirmed the previous findings that paludrine could effectively prevent its fermentation and that paludrine could be completely recovered from *neera* before use as beverage or for preparing *gur* by passing preserved *neera* through activated paddy husk charcoal.

The conditions for effective removal of paludrine by active charcoal have been worked out and the adsorptive capacity of the charcoal has been estimated to be 54 mg. paludrine/g. of charcoal.



CBRI, ROORKEE—Assembly of prestressed concrete trusses and columns

Estimation of vitamin content of palm *gur* prepared from *neera* preserved with paludrine and sulphur dioxide, has shown that thiamine, niacin, riboflavin and ascorbic acid are not absorbed during preservation and subsequent removal of paludrine by charcoal.

Study of the mechanism of action of paludrine using the organisms *Lactobacillus casei*, *L. arabinosus*, *L. bulgaricus* and *Leuconostoc mesenteroides* has shown that the inhibition of these bacteria is partly due to surface activity and this is overcome by Tween 80 and oleic acid—P.S. SARMA & T.S. RAMAN, University Biochemistry Department, Madras University, Madras.

Corrosive Constituents of Soils in Madras State—Laboratory studies for finding out the minimum salinity in the soil that will bring about corrosive effects on building materials such as pipes made of galvanized iron, cast iron and asbestos cement and concrete cubes have been carried out using synthetic soil made from sand impregnated with solutions containing carborate, sulphate and chloride ions.

The results indicate the following tentative conclusions: (i) Carbonates have very little corrosive action on galvanized iron whereas they have maximum effect as compared to sulphates and chlorides on cement pipes. There is not much comparable difference between the three anions in respect of cast iron. The corrosion of cast iron in soils with lower carbonate concentration is higher than with higher carbonate concentrations, (ii) Sulphates are more corrosive on cement pipes than similar concentrations of chlorides. The corrosive effect on galvanized iron is not appreciable and is considerably lower than that in the case of similar concentrations of chlorides, and (iii) The corrosive effects of chlorides are marked on galvanized iron and cast iron but not quite distinguishable from the effects of the other two anions on cement—Irrigation Research, Public Works Department, Madras.

PERSONAL

(*Contd. from p. 1, col. 3*)

●Shri H.S. Oberoi, Section Officer: Grade III resumed duty in the CSIR Secretariat, New Delhi, on transfer from CBRI, Roorkee, with effect from August 3, 1959.

* * *

●Lt.-Gen. H. Williams, Director, CBRI, Roorkee, left India on Sept. 2, 1959 on a tour of U.S.S.R. and France to study the latest researches on buildings at the invitation of the Academy of Structures & Architecture, U.S.S.R. and the Government of France. He will attend the Congress of the *International Council for Building Research and Documentation* at Rotterdam during Sept. 21-27, 1959 and visit the Building Research Station, Fire Research Station and Paint Research Laboratories in U.K.

●Dr. R. Vaidyeswaran, Senior Scientific Officer, RRL, Hyderabad, who had been to West Germany for post-graduate studies in *Fuel Technology* under the Indo-German Industrial Cooperation Scheme, returned to India and resumed duty on July 29, 1959. He was conferred the Dr. Ing. degree on completion of his studies.

* * *

●Dr. S. Husain Zaheer, Director, RRL, Hyderabad, has been nominated a member of the (1) *Mineral Committee* of the *State Industrial Development Council*, Government of Assam and (2) *Forest Utilization Advisory Board*, Government of Andhra Pradesh.

●Dr. J.L. Sarin, Industrial Liaison Officer, CSIR, has been nominated a member of the *Council of Indian Rubber Manufacturers' Association*, Bombay.

●Shri Y.K. Raghunatharao, Asst. Director, CFTRI, Mysore, has been nominated a member of the *Solvent Extraction Sub-Committee, Indian Central Oilseeds Committee*, Hyderabad.

●The following officers have been nominated members of Committees/Panels of the *Indian Standards Institution*:

Dr. D.S. Bhatia, Asst. Director, NCL, Poona—*Food Colours Sectional Committee.*

Shri Prem Prakash, Asst. Director, NPL, New Delhi—*Screw Thread Tolerances and Gauging Practices Sub-Committee.*

PATENTS & PROCESSES

Applications Filed

INDIA

67572: *Improvements in or relating to the production of smooth hard-anodic coatings on aluminium*—A. Jogarao & B. Sambamurti, CECRI, Karaikudi.

68869: *Improvements in or relating to the manufacture of benzidine and substituted benzidines*—H.V. Udupa, G.S. Subramanian & K.S. Udupa, CECRI, Karaikudi.

Application Accepted

U.K.

12879/57: *Isolation of keto-steroid from Lantana camara* Linn.—V.N. Sharma & K.N. Kaul, NBG, Lucknow.

Applications Sealed

INDIA

61585: *A process for the manufacture of an ammonium phosphate-sulphate fertilizer*—Jagannath Gupta, Kadambi Seshadri, Joseph Lobo & M.N. Rao, NCL, Poona.

62336: *A new process for the conversion of coal, coke or the like into an ion-exchanger for water softening, deionization and the like*—B.K. Mazumdar, S.K. Chakrabartty, S.N. Roy & A. Lahiri, CFRI, Jealgora.

62337: *Improvements in the preparation of organic nitrogenous fertilizers*—P.N. Mukherjee & A. Lahiri, CFRI, Jealgora.

64225: *Low melting chemically resistant glass compositions*—Atma Ram, S. Kumar & P. Nath, CGCRI, Calcutta.

Process Ready for Exploitation

FACTICE FROM TOBACCO SEED OIL

Factice, generally known as rubber substitute, is widely used as a compounding ingredient in rubber formulations where high flexibility and velvet-like finish are required. Factice is produced indigenously from linseed oil, rapeseed oil, sesame oil and castor oil, but the production is too small to meet the requirements.

The *National Chemical Laboratory*, Poona, has standardized conditions for the preparation of white and brown factices from tobacco and safflower seed oils. The products are comparable in performance to imported materials.

Details of the process are available, free of charge, to interested parties from the Director, National Chemical Laboratory, Poona.

NEW PUBLICATIONS

SOME ASPECTS OF FOOD TECHNOLOGY IN INDIA

Editors : H.A.B. Parpia, R.C. Bhutiani, K.L. Radhakrishnan,
A.N. Sankaran & B.V. Subbarayappa
Pp. viii + 160; Crown 8vo

For copies write to:

The Director, Central Food Technological Research Institute, Mysore

* * *

BLACK COAL AND GOLDEN EGGS

An illustrated brochure outlining the research activities of the Central Fuel Research Institute, Jealgora for the conservation and rational utilization of coal.

Copies available from:

The Under Secretary, Publications Directorate, CSIR,
2-Old Mill Road, New Delhi-1

Printed at Asia Press, Delhi-7, and Published by the Council of Scientific & Industrial Research, Old Mill Road, New Delhi-1.

R. N. 4512/57

SIR NEWS

VOL. 9 NEW DELHI — OCT. 10, 1959 : ASVINA 18, 1881 NO. 19

MYSORE 5-11-59

MEETINGS & SYMPOSIA

CSIR Governing Body

The meeting of the Governing Body scheduled to be held at 9.30 a.m. on Oct. 17, 1959 in the Conference Room of the Ministry of External Affairs, Central Secretariat, New Delhi, will now be held at 10.30 a.m.

Recent Advances in Oils and Fats

A symposium on 'Recent Advances in Oils, Fats and Allied Products' will be held at the Harcourt Butler Technological Institute, Kanpur during Oct. 25-27, 1959, under the joint auspices of the Council of Scientific & Industrial Research, Indian Central Oilseeds Committee, and Oil Technologists' Association of India.

Papers covering the following aspects will be presented and discussed at the symposium in six sessions.

(1) Production of oils and fats
(2) Refining and hydrogenation
(3) Chemistry, analysis and testing
(4) Fatty acids, soaps and detergents
(5) Surface coatings
(6) General, such as animal and marine oils, utilization of byeproducts, food & nutrition.

An exhibition displaying the advances made in oils, fats and allied industries, including available literature related to the subject, will be arranged.

CSIR Governing Body Members

Dr. K.S. Krishnan, Director, NPL, New Delhi and Prof. P. Maheshwari, Head of the Botany Department, University of Delhi, Delhi have been elected members of the Governing Body as representatives of the Board of Scientific & Industrial Research.

The Vice-President, CSIR, has been pleased to nominate Prof. S.N. Bose, National Professor of Physics, a member of the Governing Body.

RRL, Assam : Planning Committee

The Vice-President, CSIR, has been pleased to constitute the following Planning Committee for the Regional Research Laboratory, Assam for assisting in the construction and planning of the laboratory.

Shri D.R. Kohli, Planning & Development Secretary, Government of Assam (*Chairman*); Dr. J.W. Whitaker; Chief Engineer, PWD, Government of Assam; Director, Tocklai Experimental Station, Assam *or* his representative ; and Dr. B.N. Mitra, Director, Regional Research Laboratory, Assam (*Members*).

PERSONAL

●Dr. G.S. Siddhu has been appointed, on promotion, Asst. Director, RRL, Hyderabad, with effect from Aug. 28, 1959.

Dr. Siddhu (*b.*, July 4, 1920, Patiala) got his M.Sc. and Ph.D. Degrees in Chemistry from Lucknow University. He worked in *Pregl Laboratory*, Graz and in *Neus Chemisches Institut* of Heidelberg University. His subjects of study are pharmaceuticals and drugs, cellulose technology, microanalysis and pilot plant production of organic chemicals

●Dr. M.G. Krishna has been appointed, on promotion, Asst. Director, RRL, Hyderabad, with effect from Aug. 28, 1959.

Born at Rajahmundry, Andhra Pradesh (July 18, 1922), Dr. Krishna obtained his M.Sc. Degree in Chemical Technology from Andhra University (1944) and Ph D. Degree in Chemical Engineering from Leeds University (1949). He was deputed to West Germany, U.K., Finland and Holland to study low-temperature carbonisation of coal (1954-55). His specialised field of research is chemical engineering and fuels ; he has also gained experience in the designing, installation and operation of pilot plants pertaining to coal carbonisation and processing.

●The Vice-President, CSIR, has been pleased to sanction the continuation of Shri R.N. Sharma as officiating Asst. Editor, Publications Directorate, CSIR, with effect from Sept. 23, 1959 *vice* Shri K. Kashyapa, who has proceeded on deputation to U.K.

●Dr. S.S. Malhotra has been appointed Senior Scientific Officer, NCL, Poona, with effect from Sept. 4, 1959.

●Shri G.R. Srinivasa Murthy has been appointed Civil Engineer, NPL, New Delhi, with effect from July 18, 1959.

●Shri D.P. Wadhawan has been appointed Purchase Officer, CMERI, Durgapur, with effect from Sept. 21, 1959.

* * *

●Prof. S.R. Mehra, Director, CRRI, New Delhi, left Delhi on Sept. 16, 1959 to attend the *XIth International Road Congress* at Rio de Janeiro, Brazil (Sept. 21-Oct. 3, 1959). Later, he will visit various research laboratories in France at the invitation of the French Government under the Indo-French Technical Co-operation Agreement.

●Dr. L.A. Ramdas, Asst. Director, NPL, New Delhi, left for Madrid, Spain, to attend the *15th Session* of the *Advisory Committee on Arid Zone* and a symposium on 'Plant Water Relationships in Arid and Semi-arid Conditions'.

●Shri K Kashyapa, Asst. Editor (Other Publications), Publications Directorate, CSIR, left for U.K. on Sept. 22, 1959 for studies in *Botanical Nomenclature* under the Colombo Plan. He will work at the Royal Botanic Gardens, Kew.

(*Contd. on p. 4, col. 1*)

BRIEFS

Pharmaceutical Research in NCL

Researches on pharmaceutical chemicals have been in progress at the National Chemical Laboratory, Poona for sometime. Two aspects which have received particular attention are : synthesis of drugs or their key intermediates from indigenous starting materials; and substitutes for therapeutic chemicals which are at present imported.

Processes for the preparation of the following chemicals have been worked out : Deoxyanisoin, the key intermediate in the synthesis of diethylstilbestrol, widely used in hormone therapy and in the treatment of prostatic cancer; *m*-xylohydroquinone (reported to be an oral contraceptive) from meta-5-xylenol obtained from coal tar distillation; 4-hydroxycoumarin (key intermediate for the preparation of anticoagulant drugs and rodenticides); hexvlresorcinol (used as an anthelminitic, germicide and urinary antiseptic); sodium nimbinate (useful diuretic); pyridoxine hydrochloride (vitamin B_6); vitamin A acetate using C_{14}-aldehyde; vitamin C from sorbitol, transfusion gelatin by an enzymic process and its possible use as plasma substitute in blood transfusion.

The process for the production of vitamin C has been tried on a pilot-plant scale; and it has been leased out to a private firm for commercial development.

Pre-stressed Concrete as Applied to Buildings

The proceedings of the symposium on 'Prestressed Concrete as Applied to Buildings' held in February 1958 at the *Central Building Research Institute*, Roorkee have been published in two issues of the *Indian Construction News*.

The first issue (August 1958, price Rs. 5) contains twenty papers presented at the symposium. Of these, ten are from engineers in U.S.A., U.K., France and Poland. The papers are grouped under four heads : Materials and methods; concrete roofs; research; and economics.

The second issue (May 1959, price Rs. 2) published as a Supplement includes three papers from U.S.S.R. delegates. The subjects dealt with are : Designing of prestressed reinforced concrete construction accepted in U.S.S.R. ; Use of precast and prestressed reinforced concrete constructions in industrial buildings in U.S.S.R.; and The industrialisation of manufacturing and assembly of prefabricated reinforced concrete and prestressed constructions.

Copies of the publications are available from the Assistant Director (Information), Central Building Research Institute, Roorkee.

Research Fellowships

The following have been awarded *Senior Fellowships* for research under the schemes noted against their names :

1. P. K. GHOSH – *Carbohydrate metabolism as effected by administration of sulfa drugs, etc.* (Bikaner Medical College, Bikaner).
2. S. P. RAMAN– *Chemistry of Indian plant resins* (Bose Institute, Calcutta)
3. K. K. TANDAN—*Non aqueous acid-base titration* (Jadavpur University, Calcutta)

Research Schemes

The Director-General, Scientific & Industrial Research, has been pleased to accord his approval to the transfer of the research scheme ; *Absolute value of rate constants in polymerization* (Investigator-in-charge Shri P. Bagchi) to Dr. A. K. Sarkar, Research Officer, Department of Macromolecules, Indian Association for the Cultivation of Science, Calcutta.

Prof. S. R. Palit, Indian Association for the Cultivation of Science, Calcutta will supervise the work of the following schemes in the absence abroad of Prof. P. C. Dutta : (i) *Synthetic studies on diterpenoid resin acid*, (ii) *Synthetic studies in triterpenoid* ; and (iii) *Preparation of industrially important sesquiterpenes.*

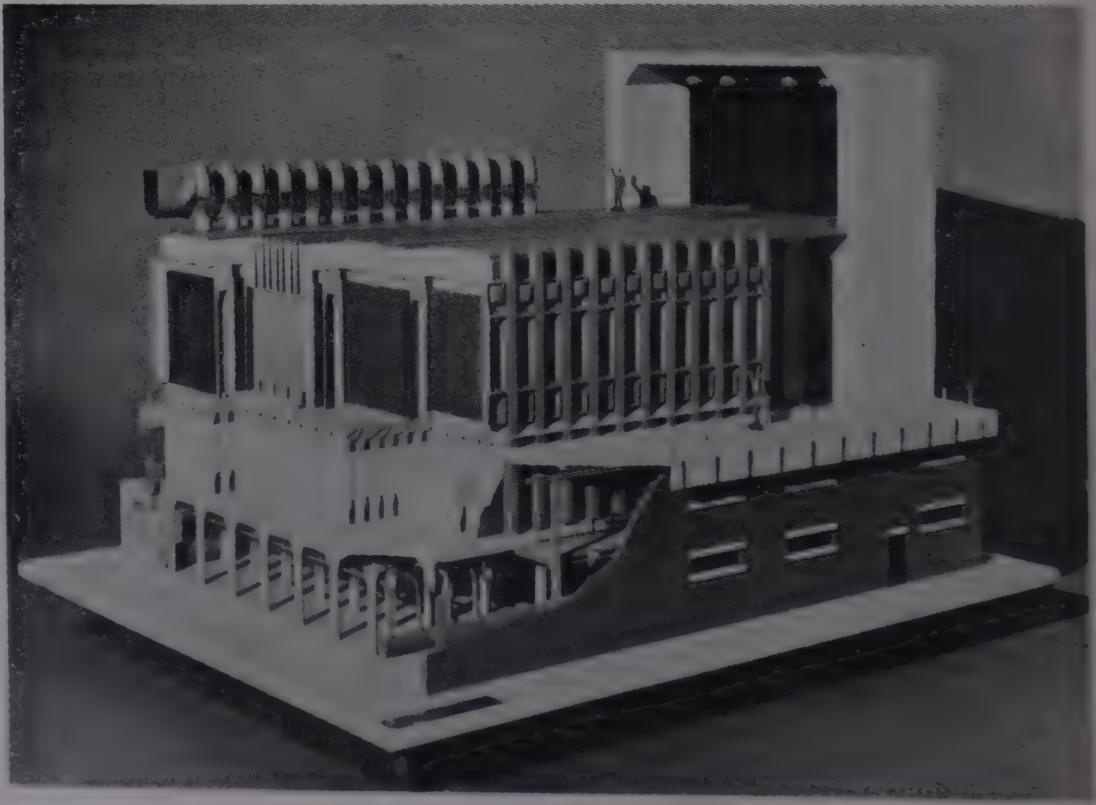
* * *

The *Central Electrochemical Research Institute*, Karaikudi participated in the Exhibition organised by the State Government, Madras under the Second Five-Year Plan Publicity Week at Devakottai and Karaikudi.

Model of a Coke Oven Plant on Display at BITM

A model of a coke oven plant was presented to the Birla Industrial & Technological Museum, Calcutta by *Simon-Carves Limited*, U.K. at a function held at the Museum on Sept. 19, 1959. The model has been housed near the Blast Furnace model in the gallery on Metallurgy.

Models pertaining to the following subjects are in display in the various galleries of the Museum : Petroleum, electricity, nuclear physics, electronics, television, optics and metallurgy. The museum is open to the public on week days, except Mondays, Saturdays and notified holidays, from 2.00 p.m. to 7.00 p.m.



BITM, CALCUTTA—Sectionalised model of a part of a coke oven battery donated by *Simon-Carves Ltd.*

RESEARCH IN PROGRESS

National Laboratories

NML, JAMSHEDPUR

Weldability of Steels—An apparatus for assessing the weldability of low-alloy high-tensile structural steels by measuring their transformation characteristics by dilation has been set up. It is capable of recording quick temperature changes of test specimens.

CFTRI, MYSORE

Preparation of Hydrofuramide—Hydrofuramide used as a reagent in the modified Baudoin test *(CSIR News*, Vol. 8, No. 17, p. 3) has been prepared in a stable form by a simple process. The compound (white, crystalline, m.p., 117°C.) releases furfural on treatment with alcoholic hydrochloric acid.

Vitamin C Concentrate from Indian Gooseberry (*Amla*)—A rich concentrate of vitamin C has been prepared from the juice of Indian gooseberry (*Phyllanthus emblica*). Concentrates which are 10-20 times as potent as the juice have been obtained.

Biochemical Changes during the Germination of Agathi Seeds—The following changes have been noticed during the germination of *Sesbania grandiflora* Pers: (i) Inconsiderable change in the protein pattern; (ii) marked increase in sucrose and free reducing sugars; (iii) formation of starch which is entirely absent in resting seeds; and (iv) increase in ascorbic acid content. The inner seed coat (tegmen) acts as the source of free sugars for the synthesis of sucrose.

IIBEM, CALCUTTA

Bacterial Protease—A strain (RDB$_{11}$) related to *Bacillus subtilis* has been isolated from rotten potatoes and grown on wheat bran—groundnut cake medium. A highly active proteolytic enzyme has been isolated from the bacterium. It rapidly digests meat, dried fish, egg albumin, serum proteins, fresh and dried milk, casein and proteins from wheat, soyabean and seed cakes. It is more stable to pH variations than vegetable and animal proteases. The crude preparation can be used after mixing with sawdust, as a bating agent in leather manufacture.

The protease has been prepared in a crystalline form. It is 500 times as active as the crude product—D.K. Roy, J. Dutta & K.R. Bhattacharya.

Sponsored Research

Stability of Heated Vanaspati—The effect of heat on the chemical characteristics of vanaspati (iodine, peroxide and Kries values), its nutritional value (growth promotion and feed efficiency) and reproductive efficiency on rats has been studied.

A progressive slow decrease in the iodine value is observed when vanaspati is heated at 230-240°C. This indicates that the chances of polymerisation during heating are negligible. Peroxide formation and decomposition proceed simultaneously; high temperatures favour peroxide decomposition.

In growth promotion and feed efficiency, vanaspati heated at 230-240°C. for 8 hr. is somewhat inferior to the untreated material. These studies were carried out on rats maintained on a 10 per cent level of dietary vanaspati. The condition of liver, kidney, heart, stomach and intestinal wall of rats, maintained on heat-treated vanaspati were normal and indicate no toxic effects.

The slight difference in nutritional level may be ascribed to diminution in digestibility. Lipolytic studies showed that both heated and unheated vanaspati are acted upon by pancreatic lipase, but the unheated vanaspati is hydrolysed at a somewhat higher rate. However, the percentage of total monoglycerides in both the fats are more or less the same.

Pregnancey tests indicate that heated vanaspati is possibly slightly less potent than unheated fat—B.C. Guha & Diptendu Ganguly, Calcutta University, Calcutta.

Ethylene Oxide from Alcohol—Ethylene oxide has been prepared directly from alcohol, using a fluidized bed technique; a combined catalyst of bauxite and reduced silver is employed and a yield of 20 per cent has been realised. Crotonaldehyde is obtained (in 40 per cent yield) by using alcohol containing 0.5 per cent acetaldehyde as feed material—S. H. Ibrahim, V. V. Deshpande & N.R. Kuloor, Shri Ram Institute for Industrial Research, Delhi.

Differentiation in Hydra—A detailed study of the cell constituents in hydra was undertaken to understand the functional basis of differentation. A histogenetic map, based on the histograms of different cell types, has been constructed. The map provides relative and absolute frequencies of musculo-epithelial, cnidoblast and interestitial cells at different levels of the animal axis. Cytochemical criterion of different cells has also been determined with reference to the localization of DNA content, phosphatase enzyme and protein content.

Full grown hydra exhibits a remarkable capacity for reconstituting tentacles removed from the hypostome region. Circumcised hypostome retains its inductive power when implanted into the body of hydra—S. Mookerjee & S.S.A. Sinha, Presidency College, Calcutta.

RESEARCH PAPERS

Anthraquinone and anthrone series—xxiii; The non-identity of 1:3:8-trihydroxy-2-hydroxymethyl-anthraquinone with versicolorin and a synthesis of damnacanthol and damnacathal—N.R. Ayyangar, B.S. Joshi & K. Venkataraman, NCL, Poona. *Tetrahedron*, **6** (1959), 331-37.

A structure of evaporated cobalt sulphide layers—P.S. Aggarwal & A. Goswami, NCL, Poona. *Z. Naturforschg*, **14B** (1959), 419-21.

Limit design formulas for thin-walled columns and application to redundant structures—S. Krishnan & K.V. Shetty, NPL, New Delhi. *J. aero. Soc. India*, **10** (1959), 57-62.

Graphite for pencil manufacture—T. R. Gopalaswamy Iyengar, B. R. Marathe & G. D. Joglekar, NPL, New Delhi. *ISI Bull.*, **10** (1958), 159-62.

PERSONAL

(Contd. from p. 1, col. 3)

●Shri S.K. Majumdar, Senior Scientific Officer, CFRI, Jealgora, left for U.S.A. on Sept. 26, 1959 for training in *Coal Preparation* under the Point Four Programme.

* * *

●Shri A.K. Lahiri, Junior Scientific Officer, NML, Jamshedpur, proceeded to U.K. on June 27, 1959 for applied research on *Corrosion and Alloys* under the Colombo Plan.

* * *

●Prof. K.N. Kaul, Director, NBG, Lucknow, has been elected a member of the *International Association of Botanic Gardens* from 1959 to 1964.

●Dr. P.C. Bose, Senior Scientific Assistant, CDRI, Lucknow, has been elected fellow of the *American Association for the Advancement of Science*.

●Dr. G. Satyanarayana Rao, Senior Scientific Assistant, RRL, Hyderabad, has been awarded the Ph.D. degree in Chemistry by the Oklahama state university, oklahama (U.S.A.) for his work on *Reduction of disulfide bond in cystine with reagents like sodium sulfide and sodium hyposulfite*.

* * *

●Shri P.M. Nabar, Officer-in-charge (Planning), Central Indian Medicinal Plants Organisation, New Delhi, has been nominated a member of the *Medicinal Plants Committee, Indian Council of Agricultural Research*.

●Dr. H.V.K. Udupa, Asst. Director, CECRI, Karaikudi, has been nominated a member of the Sub-Committee of the Development Council for Alkalies and Alllied Industries to report on *Norma of Efficiency on Caustic Soda Industry*, Ministry of Commerce and Industry.

●The following officers have been nominated members of Committees/Panels of the *Indian Standards Institution* :

Dr. K. Venkataraman, Director (Principal Member) and Dr. R C. Shah, Deputy Director, NCL. Poona (Alternate Member)—*Food Colours Sectional Committee*.

Dr. A. Lahiri, Director (Principal Member) and Shri A.K. Moitra Co-ordination Officer, Coal Survey Stations, CFRI, Jealgora (Alternate Member)—*Solid Mineral Fuels Sectional Committee, Testing Sub-Committee* and *Terminology & Classification of Coal Sub-Committee*.

Shri N.N. Dasgupta, Asst. Director (Principal Member) and Shri N. G. Banerjee, ,Officer-in-charge Raniganj Coal Survey Station, CFRI, Jealgora (Alternate Member) —*Testing Sub-Committee*.

Shri N. G. Banerjee, Officer-in-charge, Raniganj Coal Survey Station (Principal Member) and Shri B. K. Majumdar, Senior Scientific Officer (Alternate Member), CFRI, Jealgora —*Terminology and Classification of Coal Sub-Committee*.

Dr. K.T. Achaya, Asst. Director, RRL, Hyderabad—*Cottonseed Oil Panel*.

Dr. S.L. Kapur, Asst. Director, NCL, Poona—*Polythene Tubes Sub-Committee*.

Dr. J.S Aggarwal, Asst. Director (Principal Member) and Shri M.A. Sivasamban, Senior Scientific Officer, RRL, Hyderabad (Alternate Member) -*Paints and Allied Products Sub-Committee*.

Dr. D.L. Subrahmanyam, Senior Scientific Officer, CEERI, Pilani—*Acoustical Equipment Sub-Committee*.

Shri Jotindar Mohan, Senior Scientific Officer, NML, Jamshedpur —*Coke Sub-Committee*.

Shri A. K. Ghosal, Statistical Officer, CFRI, Jealgora—*Composition of Standard Sizes* (*for marketing*) *Sub-Committee*.

Shri T.R. Gopalaswami Iyengar, Junior Scientific Officer, NPL, New Delhi—*Sub-Committee for Graphite for Pencils*.

PATENTS

Applications Filed

69062 : *A new ferroelectric composition and a process of making ferroelectric ceramic product*—V.B. Tare, A. P. B. Sinha & A. B. Biswas, NCL, Poona.

69164 : *An improved process for the manufacture of maleic anhydride* —B.S. Trehan, R.T. Thampy & N.R. Kuloor, Shri Ram Institute for Industrial Research, Delhi.

69165 : *A method of making cementitious material from blast furnace slag*—L.C. Jain & N.K. Patwardhan, CBRI, Roorkee.

Applications Accepted

63904 : *A process for recovering zirconium dioxide from zircon*—P. B. Chakravarti & T. Banerjee, NML, Jamshedpur.

Application Sealed

63083 : *A new method for the preparation of 4-hydroxycoumarins*—V. R. Shah, J. L. Bose & R. C. Shah, NCL, Poona.

61978 : *Stainless steels and methods of preparing them*—B.R. Nijhawan, P.K. Gupte, S.S. Bhatnagar & B.K. Guha, NML, Jamshedpur.

CENTRAL BUILDING RESEARCH INSTITUTE, ROORKEE

Announcing the publication of :

Prestressed Concrete as Applied to Buildings

Proceedings of the symposium held at CBRI, Roorkee during 1958. Containing 23 papers contributed by distinguished Indian and Foreign engineers. Published in two issues of the INDIAN CONSTRUCTION NEWS.

Demy 4 to; Pp. 136 & 28; Price Rs. 5 & Rs. 2 respectively.

Copies available from :

The Assistant Director, Central Building Research Institute, Roorkee.

Printed at Asia Press, Delhi-7, and Published by the Council of Scientific & Industrial Research, Old Mill Road, New Delhi-1.

R. N. 4512/57

CSIR NEWS

VOL. 9 NEW DELHI — OCT. 24, 1959 : KARTIKA 2, 1881 NO. 20

LIBRARY
21.11.59

CENTRAL SCIENTIFIC INSTRUMENTS ORGANIZATION TO BE ESTABLISHED

The Board of Scientific and Industrial Research and the Governing Body of the Council of Scientific & Industrial Research met in New Delhi on Oct. 16 and Oct. 17, 1959 respectively. The Prime Minister, Shri Jawaharlal Nehru presided.

New Institutes and Divisions

At the instance of the Planning Commission, the Governing Body of the CSIR has accepted the responsibility of setting up a *Central Scientific Instruments Organization* for promotion and development of indigenous manufacture of scientific instruments of all categories needed for teaching, research and industry.

Establishment of a *Petroleum Research Institute* at Dehra Dun was approved.

Creation of Divisions of *Essential Oils* and *Dyes & Organic Intermediates* at the National Chemical Laboratory, Poona and Sections on *Leather Economics* and *Leather Goods* at the Central Leather Research Institute, Madras was approved.

Regional Centres

The Governing Body accorded approval to the establishment of: three Regional Extension Centres of the Central Leather Research Institute, Madras, at Calcutta, Bombay and in U.P.; Cloud-seeding Centres at Agra and Jaipur under Rain & Cloud Physics Research Unit, and a Small Scale Unit for the production of Ferro-alloys at the National Metallurgical Laboratory, Jamshedpur.

Pilot Plants and Surveys

Setting up a pilot plant for semi-large scale production of pure active principles from medicinal plants of the North-Western Himalayan region at the Regional Research Laboratory, Jammu was approved in principle.

An all-India survey and testing by the Central Road Research Institute, New Delhi to locate major deposits of clays suitable for making puzzolanic surkhi has been recommended.

Grants-in-aid

The Governing Body sanctioned grants-in-aid to 38 new research schemes (list given at p. 2). Besides, grants-in-aid to 11 Retiring Research Scientists were approved.

Symposia

Holding of symposia and seminars on the following subjects during 1959-60 was approved.

SYMPOSIA

1. *Pilot Plants in Metallurgical Research and Development*—National Metallurgical Laboratory, Jamshedpur.
2. *Laboratory Animals*—Indian Institute for Biochemistry & Experimental Medicine, Calcutta.
3. *High Polymers*—Chemical Research Committee.

SEMINARS

4. *Electro-chemistry* — Central Electro-chemical Research Institute, Karaikudi.
5. *Castor Oil*—Regional Research Laboratory, Hyderabad.
6. *Problems of High Speed Flight and Allied Topics* — Aeronautical Research Committee in collaboration with the Indian Institute of Science, Bangalore.

Prof. M.S. Thacker

Prof. M.S. Thacker, Director-General, Scientific & Industrial Research and Secretary, Ministry of Scientific Research & Cultural Affairs is to be the Chairman of the Committee appointed by the Government of India to inquire into the state of post-graduate technical education in the country and to make recommendations for its development in consonance with the country's needs. The Committee consists among others of the following members: Dr. K.S. Krishnan, Dr. D.S. Kothari and Dr. A.N. Khosla.

PERSONAL

●Dr. K.N. Mathur, Deputy Director, NPL, New Delhi, has been appointed Director, Central Scientific Instruments Organization, Delhi. Dr. Mathur will take charge on Oct. 30, 1959.

●Dr. H.A.B. Parpia, Asst. Director, CFTRI, Mysore, has been appointed Officer-on-special Duty (Extension Services), CSIR, New Delhi, with effect from Oct. 15, 1959.

●Dr. K.S. Chari has been appointed, on promotion, Asst. Director, RRL, Hyderabad, with effect from Aug. 28, 1959.

Dr. Chari (*b.*, Feb. 17, 1918, Mysore State) obtained his B.Sc. degree from Madras University (1940) and Ph.D. degree from the University of Manchester, U.K. (1949). His specialized field of study is Chemical Engineering. He is responsible for designing, erection and operation of a large number of pilot plants in the Laboratory.

●Dr. G.S. Swamy has been appointed, on promotion, Asst. Director, RRL, Hyderabad, with effect from Aug. 28, 1959.

Dr. Swamy (*b.*, Aug. 25, 1924, Denduluru, Andhra Pradesh) is a graduate in Mechanical and Electrical Engineering. In 1949-50 he had been to U.K. for specialization in the manufacture of chemical machinery. He is responsible for erection and operation of a large

(*Contd. on p. 4, col. 1*)

SYMPOSIUM

The symposium on **Amoebiasis and other Infections in India and its Therapy** (*CSIR News*, Vol-9. No. 12, p.1) will be held in the Central Drug Research Institute, Lucknow from Nov. 16 to Nov. 18, 1959.

NEW RESEARCH SCHEMES SANCTIONED

On the recommendation of its Advisory Board, the Governing Body of the Council have sanctioned the following new research schemes :

BIOLOGICAL RESEARCH COMMITTEE

1. *Investigation of soft woods (light woods) of Kerala State*—Shri Russell Solomon, Professor and Head of the Department of Botany, N.S.S. College, Kerala State.

2. *A study of the cellular factors controlling sensitivity of plant chromosomes to X-rays and chemical agencies*—Dr. Arun Kumar Sharma, Calcutta University, Calcutta.

3. *Cytological and taxonomic studies on the polypodiaceae of Eastern India*—Dr. G. Panigrahi, Systematic Botanist, Botanical Survey of India, Eastern Circle, Shillong.

CIVIL ENGINEERING & HYDRAULIC RESEARCH COMMITTEE

4. *Economic design of large span roofs*—Dr. O.P. Jain, Reader in Civil Engineering, University of Roorkee, Roorkee.

5, 6 & 7. *Study of certain non-stationary flow problems by electrical analogue techniques* ; *Study of contact pressure distributions under footings founded on soils that swell and shrink*; and *Investigation of secondary consolidation characteristics of black cotton soils*—Prof. S. Panchanathan, Professor of Soil Mechanics & Foundation Engineering, College of Engineering, Madras.

CHEMICAL RESEARCH COMMITTEE

8. *Studies in proteins and certain B-vitamins inter-relationships* — Dr. M.V. Radhakrishna Rao, Department of Nutrition, Haffkine Institute, Bombay.

9 & 10. *Electrical conductance and viscosity of electrolyte solutions in a wide range of concentration* ; and *Dielectric constant in relation to liquid-liquid miscibility*—Dr. C.V. Suryanarayana, Reader in Chemistry, Annamalai University, Annamalainagar.

11. *Magneto chemical studies on organo-inorganic complexes*—Dr. H. L. Nigam, Department of Chemistry, University of Allahabad, Allahabad.

12 & 13. *Absorption of ions in micro and tracer concentration* ; and *Studies in the electromigration of labelled ions*—Dr. H. J. Arnikar, Reader in Chemistry, Banaras Hindu University, Varanasi.

14 & 15. *Inorganic microchemistry using Weisz ring oven technique*; and *Studies in inorganic complexes*—Dr. Arun K. Dey, Department of Chemistry, University of Allahabad, Allahabad.

16. *Biochemical studies on the mode of action of different antibiotics*—Dr. Jagat Jiban Ghosh, Department of Applied Chemistry, University College of Science and Technology, Calcutta.

17. *Role of riboflavin in the synthesis and regeneration of haemoglobin, plasma and liver proteins and enzymes*—Dr. Sailen Mookerjee, University Department of Biochemistry, Nagpur University, Nagpur.

18. *Underground corrosion of metals and alloys under Indian conditions*—Dr. B. Chatterjee, Professor of Chemistry and Head of the Department of Metallurgy and Chemistry, Bengal Engineering College, Howrah.

19. *Mechanism of coagulation of lyophobic colloids in non-aqueous media*—Dr. B. P. Yadava, Department of Chemistry, Lucknow University, Lucknow.

20. *Transference measurements in polybasic acids*—Dr. Ram Dulary Srivastava, Assistant Professor of Chemistry, University of Lucknow, Lucknow.

21. *Physico-chemical studies on surface active substance at the dropping mercury electrode*—Dr. S.L. Gupta, Birla College of Science Pilani.

22. *Solvent effects in nucleophillic aliphatic substitution* — Dr. R. Anantharaman, Reader in Physical Chemistry, Applied Chemistry Department, University of Kerala, Trivandrum.

ELECTRICAL & MECHANICAL ENGINEERING RESEARCH COMMITTEE

23. *D.C. induction machines*—Shri R.G. Jankiraman, Professor of Electrical Engineering, Coimbatore Institute of Technology, Coimbatore.

24. *Turbo charges for diesel engines*—Shri G. Shanmugham, Professor of Mechanical Engineering and Shri C. P. Kothandaraman, Lecturer in Mechanical Engineering, P. S. G. College of Technology, Coimbatore.

25. *Machine tool cutter control mechanism*—Shri Hironmoy Banerjee, Associate Professor in Electrical Engineering, Birla Institute of Technology, Ranchi.

26. *Development of a new torquemeter using magneto-striction phenomena* — Shri R. Subbayyan, Professor of Electrical Machine Design, P.S.G. College of Technology, Coimbatore.

27. *Development of investment precision casting techniques*—Prof. S.N. Iyengar, Indian Institute of Technology, Kharagpur.

ESSENTIAL OILS RESEARCH COMMITTEE

28. *Refining of oleo-resin turpentine and effect of acidic refining agents*—Dr. K. C. Gulati, Professor of Agricultural Chemistry, Indian Agricultural Research Institute, New Delhi.

29. *Investigations on the aromatic resources of Kerala*—Shri N. Subramonia Wariyar, Head of the Department of Chemistry, University College, Trivandrum.

GEOLOGICAL & MINERALOGICAL RESEARCH COMMITTEE

30. *Structure and genesis of the Singhbhum granite including the genesis of the associated mineral deposits*—Shri Ajit Kumar Saha, Department of Geology, Presidency College, Calcutta.

31. *Regional gravity and magnetic investigation in parts of the gondwana formations in the Godavari valley, Andhra Pradesh* — Prof. M.S. Krishnan & Dr. V. Bhaskara Rao, Andhra University, Waltair.

32. *Systematic study (both fundamental and applied) of the clays and clay minerals of Madhya Pradesh, with special reference to their economic suitability and a fundamental study of clay minerals associated with ore bodies*—Dr. W.D. West, Department of Applied Geology, University of Saugar, Saugar.

PHYSICAL RESEARCH COMMITTEE

33. *Measurement of anisotropy of absorption and fluorescence spectra of organic aromatic single crystals*—Dr. S. C. Ganguly, Jadavpur University, Calcutta.

(Contd. on p. 4, col. 3)

RESEARCH IN PROGRESS

National Laboratories

NML, JAMSHEDPUR

Nickel Plating—A nickel plating bath has been developed for dull nickel plating. Nickel salts indigenously produced can be used in the bath avoiding import of proprietary salts. The impurities present in the salt are removed by electrolysing the solution at low current density (2–3 amp./sq. ft.) at *p*H 5.6 using corrugated steel sheets as cathode. Pitting is removed by the addition of a small amount of hydrogen peroxide. The bath has good throwing power and high current efficiency and gives satisfactory nickel deposits.

CFTRI, MYSORE

Estimation of Moisture in Parboiled Rice—A simple and quick method for estimating moisture content of parboiled rice (moisture range, 11–17 per cent) has been evolved. The method is based on the observation that the bulk density of rice is 0.75 g./ml. at 20 per cent moisture and 0.8 g./ml. at 11 per cent moisture.

The density of rice is determined by the immersion method using mixtures of kerosene with chloroform or carbon tetrachloride. The lowest density of the solvent mixture at which the rice grains just sink is taken as a measure of the density.

RRL, JAMMU

Cultivation of Chenopodium—*Chenopodium ambrosioides* var. *anthelminticum* A. Grey from U.S.A. has been successfully cultivated in the Laboratory nursery. The ripe fruit on steam distillation yielded 3.5 per cent essential oil containing 70–80 per cent ascaridol. The yield of air-dried crop (seeds) per acre ranged from 1500 to 1600 lb.—L. D. Kapoor & K. L. Handa.

Sponsored Research

Enzymes from Vegetable Sources—Determination of the activities of samples of urease obtained from dehusked *Cajanus indicus* at 30°C. and 37°C. showed that the activity was about 1.6 times more at 37°C. than at 30°C. Six methods of crystallization of the enzyme were tried. Of these, extraction by 40 per cent ethanol and precipitation by more ethanol gave a crystalline product with the highest activity though the yield was poor. The activity was not affected by treatment with methyl, ethyl, *n*-propyl, *iso*-propyl and *n*-butyl alcohols. The solubility in water of urease prepared by the different methods of crystallization ranged from 200–314 mg. per cent. From the point of view of yield, activity and solubility, the best results were obtained by (i) water extraction of the urease and precipitation by acetone and (ii) extraction by 25 per cent ethanol followed by precipitation by more ethanol.

The kinetic study of crystalline urease showed that (i) the optimum *p*H is 7.4–7.6 and (ii) the urea-urease reaction follows the first order law. The Michaelis constant and the velocity constant were also determined—R. L. Nath & T. K. Pradhan, School of Tropical Medicine, Calcutta.

Flavin-nucleotide Synthesizing Coenzymes—Isolation and characterization of flavin-nucleotide synthesizing coenzymes from plants and milk have been studied. The presence of coenzyme, named 'flavokinase' has been detected for the first time in plants. The enzyme catalyses the conversion of riboflavin to FMN (flavin mononucleotide) in presence of ATP (adenosine triphosphate) magnesium sulphate and sodium fluoride. The enzyme functions optimally at *p*H 8.5 and at a temperature of 55° F. A 75-fold purification of the enzyme has been achieved.

The enzyme is activated in the presence of sulphates of magnesium, zinc and manganese; retarded in the presence of copper sulphate, cobalt acetate and potassium permanganate, and is unaffected in the presence of calcium chloride, nickel chloride and lithium chloride. Hydroxyl amine inhibits the activity of the enzyme.

The presence of flavokinase and FAD (flavin adenine nucleotide) synthesizing enzymes in cow's milk and the occurrence of FAD synthesizing enzyme in human milk have been detected—Dr. H. R. Cama, Indian Institute of Science, Bangalore.

Glazing in Cold Storage of Fish—Effect of different glazes (ascorbic acid, citric acid and sodium nitrite) on the nutritive value of frozen *surmai* has been studied. Solubility tests (in 5 per cent sodium chloride solution) on protein from fish stored for four months showed that the denaturation of protein was 44 and 49 per cent in the case of fish glazed with citric acid and sodium nitrite respectively as compared to 59 per cent denaturation observed in control; ascorbic acid glaze is not much effective in preventing denaturation of proteins. The absence of any change in the sareoplasmic proteins during storage shows that the denaturation is restricted to the actomyosin fraction of the protein.

Glazing with citric acid and sodium nitrite also prevents (i) the loss of moisture due to desiccation, (ii) the increase in the N.P.N. content, (iii) the decrease of ATP-ase activity of the fish muscle tissue and (iv) the decrease in amino acids during storage. The loss of lysine, methionine, arginine, leucine and valine is more than the rest of the amino acids—B. C. Guha, Calcutta University, Calcutta.

Morphogenetic Changes in Chick Embryos—The effect of cobalt chloride on chick embryos at various stages has been recorded. Embryos from the blastoderm are fixed in different fixatives, dehydrated, embedded in paraffin and sections taken. For the study of gross anatomy, Bouin's fluid is used as fixative and sections are stained by iron-alum haematoxylin; for the study of nucleus, Carnoy's fluid is used as fixative and sections are stained by Feulgen's technique; for the study of cytoplasm, Zenker fixed sections are stained in Toulidine blue. The results show that cobalt chloride (0.5 per cent) is effective in inducing mitosis as well as death—S. Adhikari, Research Fellow, Zoology Department, Presidency College, Calcutta.

Research Scheme Terminated

The research scheme, *Manufacture of sample calculograph* (Investigator-in-charge: Shri B.C. Mulajkar, Hyderabad) will be terminated with effect from Oct. 31, 1959.

An/

BRIEFS

Practical Demonstrations

The Central Leather Research Institute, Madras arranged the practical demonstration of the following processes as part of the Extension Programme of the Laboratory during this month. The place of demonstration is indicated against the process.

1. *Manufacture of waxed chrome leather and kattai leather*—Palakkarai, Tirucbirapalli.
2. *Manufacture of corrected grain leather and rapid tanned sole leather*—Cooper Allen Tannery Branch, Kanpur.

Research Fellowships

The following have been awarded *CSIR Fellowships* in the NML, Jamshedpur for research on projects noted against their names :

Senior Fellowships :

SHRI P. L. AHUJA—*Mechanism of phase transformation in alloys deposited at constant cathode potential* (with effect from Sept. 3, 1959).

Junior Fellowships :

1. SHRI K.R.K. REDDY—*Fundamental studies in the flotation of minerals* (w.e.f. July 10, 1959).
2. SHRI K. SOMA KUMAR—*Development of electronic instrumentation in metallurgical research* (w.e.f. Oct. 1, 1959).
3. SHRI R. G. JOB—*Improved atomic mineralogy and mineral prospecting* (w.e.f. Sept. 28, 1959).

* * *

The following have been awarded *Junior Research Fellowships* for work at the NBG, Lucknow in the subjects noted against their names :

1. SHRI P.S. MISRA—*Reclamation of usar soils.*
2. SHRI Y. C. AWASTHI—*Chemical investigation of some medicinal oilseeds.*
3. SHRI G.C. RATH—*Edible fungi and their cultivation in India.*

PERSONAL

(*Contd. from p. 1, col. 3*)

number of pilot plants in the Laboratory.

●SHRI K.P.K. MENON has resumed charge as Stores Verification Officer, CSIR, New Delhi, with effect from Oct. 8, 1959, consequent on being relieved by the Naval Stores Office, Bombay.

●SHRI M. V. BHIDE, Civil Engineer, CSIR Secretariat, New Delhi, relinquished charge of his post with effect from Oct. 7, 1959.

●SHRI K. RAGHAVAN, Field Officer, National Register Unit, CSIR, New Delhi, relinquished charge with effect from Sept. 30, 1959.

* * *

●DR. K. VENKATARAMAN, Director, NCL, Poona, left for West Germany for a period of one month to study the latest developments in that country in scientific sphere at the invitation of the German Academic Exchange Service.

●DR. B. R. NIJHAWAN, Director, NML, Jamshedpur, left for France on Sept. 19, 1959 at the invitation of the French Government under the Indo-French Economic and Technical Co-operation Agreement. He will also visit research institutions in Belgium, England and Germany.

●DR. T. BANERJEE, Deputy Director, NML, Jamshedpur, is exercising the financial and administrative powers of the Director, NML, as Deputy Director-in-charge during the absence abroad of Dr. B. R. Nijhawan.

●SHRI B.L. SEN, Senior Scientific Officer : Grade I, NML, Jamshedpur, left on Sept. 24, 1959 for West Germany for 8-weeks' training in the *Operation and Maintenance of Low-Shaft Furnace Pilot Plant.*

●SHRI R.A. SHARMA, Senior Scientific Officer : Grade II, NML, Jamshedpur, left for U.K. on Sept. 26, 1959 for training in *Extractive Metallurgy* for a period of one year under the Colombo Plan.

●SHRI R.K. DUBEY, Junior Scientific Officer, NML, Jamshedpur, left for U.K. on Sept. 24, 1959 for training in *Operation and Control of Electric Arc Furnace and Allied Furnaces used for Production of Alloy Steel* for a period of six months under the Colombo Plan.

●SHRI CHANAN SINGH, Senior Scientific Assistant, CDRI, Lucknow, left for U.S.S.R. for training in *Production of Vitamins* under a U.S.S.R. Government Scholarship.

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●DR. B. MUKERJI, Director, CDRI, Lucknow, has been elected a member of the *Drugs Technical Advisory Board* by the Scientific Advisory Board of the Indian Council of Medical Research.

NEW RESEARCH SCHEMES

(*Contd. from p. 2, col. 3*)

34. *Spectra and potential energy curves of diatomic molecules*—Shri Yatendra Pal Varshni, Allahabad University, Allahabad.

35. *Determination of spins and parities of the excited levels of the radioactive nuclei by (i) angular correlation method and (ii) measuring the half-lives of the levels using scintillation technique and millimicrosecond circuitry*—Prof. P. S. Gill, Professor and Head of the Department of Physics, Muslim University, Aligarh.

RADIO RESEARCH COMMITTEE

36. *Polarization of the echoes from the E and F Regions*—Dr. R. Satyanarayana, Lecturer in Physics, Shri Venkateswara University, Andhra Pradesh.

37. *Systematic study of ferroresonant circuits with reference to their application as relaxation oscillators*—Prof. N. Sarkar, Associate Professor in Electrical Engineering, Shree Govind Ram Seksaria Technical Institute, Indore.

38. *The phenomena of electrical discharge through gases and vapours and its investigation by microwave probe and optical method*—Dr. Samarendra Narayan Sen, Department of Physics, Jadavpur University, Calcutta.

Process Leased Out

TRANSPARENT ADHESIVE TAPE

The process for the production of 'Pressure Sensitive Transparent Adhesive Tape' (Indian Patent Nos. 66803 & 67490) developed by the *National Chemical Laboratory*, Poona has been leased out for commercial development to M/s *Anandi Lal Hemraj & Co.*, Bombay.

ANNOUNCEMENT

The complete set of the proceedings of the symposium on **Prestressed Concrete as Applied to Buildings** published in two issues (August 1958 and May 1959 issues) of the *Indian Construction News* is now available at concessional rate of Rs. 5. Orders for copies may be addressed to the Assistant Director (Information), Central Building Research Institute, Roorkee.

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CSIR PAVILION – WORLD AGRICULTURE FAIR

Science in Agriculture is the theme of exhibits from six national laboratories displayed in the CSIR Pavilion of the World Agriculture Fair, inaugurated by the President of India on Dec. 11, 1959. The exhibits cover a wide range—from the reclamation of alkaline soils and utilization of agriculture wastes to rural housing and road construction. A list of exhibits on display in the Pavilion is given below :

CFTRI, MYSORE—Grain Storage ; Cold Storage ; Storage without Refrigeration ; Rice Technology ; Indian Multipurpose Food ; Tapioca Macaroni ; Poushtick Atta ; Rice Bran Oil ; Infant & Invalid Foods ; New Fruit Products ; Animal Products ; Packaging Research ; Equipment, Design & Fabrication.

CLRI, MADRAS—Improvement of Raw Hides & Skins ; Leather Auxiliaries ; Bating Materials ; Vegetable Tanning ; Fat Liquors ; Glossy Finish ; Latex Cement ; Leather Board ; Finished Leathers ; Model Tanning ; Boot Polishes ; Goat Hair.

NBG, LUCKNOW—Plants in Pots ; Hydroponics ; Tissue Culture ; Utilization of Weeds ; Utilization of Non-edible Oils & Fats ; Control & Eradication of Plant Parasites ; Reclamation of Alkaline Lands ; Garden Layouts.

RRL, JAMMU—Production of Menthol ; Cultivation of Medicinal Plants ; Improved Seeds and other Propagating Materials ; Plant Protection ; Medicinal Plants available in N.W. India.

CBRI, ROORKEE—Bamboo-concrete Slabs ; Bricks from Black Cotton Soil ; Experimental Brick Kiln ; Precast Country Tile Roof ; Egg Shell ; Precast Prestressed Concrete Cantilever Trusses ; Solar Shadowgraph ; Non-erodable Plaster; Farm House.

CRRI, NEW DELHI—Model of Road Construction ; Model of a Village ; Use of Soil in Construction Work ; Models Showing Effect of Rain.

MEETING

A meeting of the *Executive Council* of the *National Physical Laboratory*, New Delhi will be held in the Conference Room of the Laboratory on Dec. 24, 1959 at 11.00 a.m. Shri A. Ramaswami Mudaliar will preside.

Training Course in Batteries

An eight-week course of Technical Training in Batteries has been instituted at the *Central Electrochemical Research Institute*, Karaikudi for the benefit of technical personnel employed in industry and organizations engaged in the manufacture and testing of batteries, particularly lead-acid batteries.

The course will commence on Feb. 1, 1960 and will comprise of ten hours of practical work a week. Admission is restricted to six candidates.

Persons who wish to undergo the training should hold a Bachelor's Degree in Science with physics and chemistry as subjects of study and preferably be sponsored by the employer.

Prospectus and application forms are available from the Director, Central Electrochemical Research Institute, Karaikudi. Completed applications should reach the Director by Dec. 30, 1959.

CLRI Practical Demonstrations

Practical demonstration of the following processes have been arranged by the *Central Leather Research Institute*, Madras during December 1959.

(1) *Manufacture of Glazed Kid Leather*—College of Leather Technology, Calcutta (Dec. 14, 1959).

(2) *Manufacture of Diaphragm Leather Discs from E.I. Tanned Sheep and Kid Skins*—Central Leather Research Institute, Madras (Dec. 21, 1959).

BRIEFS

Amoebiasis & Other Intestinal Infections

The symposium on Amoebiasis and Other Intestinal Infections was held at the CDRI, Lucknow during Nov. 16-18, 1959. Shri V.V. Giri, Governor of Uttar Pradesh, inaugurated the symposium.

Thirty papers were presented and discussed in four technical sessions, namely: (i) Incidence and epidemiology; (ii) experimental amoebiasis and screening of amoebicidal drugs; (iii) chemotherapy; and (iv) clinical aspects. Col. S. S. Bhatnagar, Dr. M. L. Dhar, Dr. K. S. Sanjivi and Dr. B. B. Bhatia, presided over the technical sessions. Dr. J.H. Burckhalter, University of Kansas, U.S.A., Drs. Jean Druey, G.T. Bassil, M. Faust (Mrs. Faust), Switzerland, Dr. & Mrs. Wyler, WHO Prof. of Pharmacology, Puerto-Rico, Dr. A. Banks, Prof. of Human Ecology, Cambridge, and Col. R.F. Bell, U.S. Army Attache, were among the delegates who participated in the symposium.

Research Fellowships

The following have been awarded *CSIR Research Fellowships.*

Senior Fellowship :

SHRI MANIKESWAR GANGULY—*Biochemical studies on the synthesis of pyrimidine derivatives as nucleic acid antagonists* (University College of Science & Technology, Calcutta).

Junior Fellowships :

(1) KM. RAMA GANGOPADHYAYA—*Biochemical studies on mode of action of different antibiotics* (University College of Science & Technology, Calcutta).

(2) SHRI V. KRISHNA MOORTHY—*Chemical constitution of the pigments of insoluble redwoods santalin and santarubin* (Delhi University, Delhi).

(3) SHRI S.K. MANAKTALA—*Preparation of usnic acid and its derivatives for antitubercular and other tests* (University of Delhi, Delhi).

(4) KM. KAMLA KUMARI PATNAIK—*Acid metabolism of plants* (Allahabad University, Allahabad).

Research Schemes

The Director-General, Scientific & Industrial Research has been pleased to approve of the scheme, *Investigation relating to the synthesis of 3:4 disubstituted piperidines* (Investigator-in-charge; Prof. Gurbakash Singh) along with the staff from the Punjab University College, Hoshiarpur to the Department of Chemistry, Banaras Hindu University, Varanasi.

CPHERI, Nagpur

The Central Public Health Engineering Research Institute, Nagpur has been enrolled as a member of the *International Water Supply Association*, London.

PERSONAL

●DR. S. PARTHASARTHY has been appointed, on promotion, Deputy Director, NPL, New Delhi, with effect from Nov. 26, 1959.

●DR. S.S.S. AGGRAWALA has been appointed, Senior Scientific Officer : Grade I, CECRI, Karaikudi, with effect from Nov. 16, 1959.

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●DR. K. S. KRISHNAN, Director, NPL, New Delhi, left for Geneva on Nov. 18, 1959 as a delegate to the *Plenipotentiary Conference* of the *International Telecommunication Union.*

●DR. A. P. MITRA, Asst. Director (Radio Propagation Unit), NPL, New Delhi, left for France on Dec. 5, 1959 for a period of about two months. He will attend the meeting of the COSPAR at Nice on Jan. 17, 1960.

●PROF. S. R. MEHRA, Director, CRRI, New Delhi, returned from tour abroad and resumed duties with effect from Nov. 14, 1959. He attended the *11th International Road Congress* held at Rio de Janeiro, Brazil and visited laboratories in France at the invitation of the French Government under the Indo-French Technical Co-operation Agreement.

●DR. NITYA ANAND, Senior Scientific Officer : Grade I, CDRI, Lucknow, returned from U.S.A. after completing his studies in the field of Biological & Medical Research under the Rockefeller Foundation Fellowship Award.

●DR. J.L. BOSE, Senior Scientific Officer, NCL, Poona, who was on deputation to U.K. under the Colombo Plan returned to India and resumed duties on Oct. 19, 1959. Dr. Bose worked at the University of Birmingham and studied *Modern Techniques in Carbohydrate Chemistry.*

●DR. D.C. DHAR, Junior Scientific Officer, CDRI, Lucknow, who had been to U.K. for training under the Colombo Plan has returned and resumed duties.

* * *

●DR. B. MUKERJI, Director, CDRI, Lucknow, has been renominated a representative of the CSIR on the *Development Council for Drugs, Dyes & Intermediates,* Ministry of Commerce & Industry for 2 years with effect from Sept. 9, 1959.

●DR P. NILAKANTAN, Director, National Aeronautical Laboratory has been nominated Chairman of the *Technical Committee on Dakotas,* constituted by the Ministry of Transport and Communications

● DR. H.A.B. PARPIA, Officer-on-Special Duty (Extension), CSIR, has been nominated a member on the *Sub-Committee* constituted by the C & T Directorate, Ministry of Commerce & Industry To Draw Up a Report for Formation of a Plywood Research Association and Setting Up a Plywood Research Laboratory.

●SHRI P.N. KATHJU, Industrial Liaison Officer, Jaipur, has been nominated a member of the Committee constituted by the Rajasthan Mineral Advisory Board to report on *Mineral Based Industries in Rajasthan.*

●PROF. G.S. RAMASWAMY, Asst. Director, CBRI, Roorkee, has been nominated a member of the *Board of Studies for Civil & Hydraulic Engineering,* Indian Institute of Science, Bangalore.

●SHRI T.V. RAMAMURTI, Senior Scientific Officer, NPL, New Delhi, has been nominated a member of the *Panel of Radio Receivers* formed by the *Bharat Electronics Ltd.,* Bangalore.

●SHRI S. GHOSH, Senior Scientific Officer, CECRI, Karaikudi, has been elected a member of the *Indian Institute of Chemical Engineers,* Calcutta.

(*Contd. on p. 4, col. 2*)

RESEARCH IN PROGRESS

National Laboratories

CFRI, JEALGORA

Nicotinic Acid from β-Picoline—A process for the preparation of nicotinic acid by direct oxidation of 'beta-picoline cut' (a fraction of crude pyridine bases from coal tar containing β- and γ-picolines and 2:6 lutidine) has been developed. The process consists in oxidizing the fraction with potassium permanganate to yield nicotinic, isonicotinic and dipicolinic acids from which nicotinic and isonicotinic acids are separated by fractional crystallization using ethyl alcohol as solvent.

The method followed at present is laborious and time consuming as β- and γ-picolines have to be fractionally separated and then oxidized—A. Lahiri, H.S. Rao, A.R. Panicker & G.N. Kulsreshta.

CFTRI, MYSORE

Insect Control with Bleaching Earth and Carbon—Investigations have shown that if Fuller's earth, kaolinic clays, ion exchange resins, soil conditioners, wood ashes, silica gel and carbon are activated, they can be used as insecticides. The insecticidal activity is proportional to the degree of activation.

Insecticides have been prepared from clays by acid activation and from carbon activated by zinc chloride.

CECRI, KARAIKUDI

Electrolytic Benzidines—Laboratory studies on the preparation of benzidines by an electrochemical process have been completed. The process is an improvement over the earlier process (Indian Patent No. 32486) developed at the Institute.

The process consists in using a rotating cathode and consequent employment of high current densities and high efficiency of reduction. The use of rotating cathode has simplified the design of high capacity cells.

A 1000 amp. cell is proposed to be set up to work out the cost data.

The process may be adopted for the preparation of substituted benzidines by reduction of nitrobenzenes—K.S. Udupa, G.S. Subramanian & H.V.K. Udupa.

CSRI, BHAVNAGAR

Potassium in Brines and Bitterns—A rapid volumetric method for the estimation of potassium has been developed. The method consists in precipitating potassium as bitartrate, dissolving the precipitate in hot water and titrating it against standard sodium hydroxide.

Sea bitterns or brines are suitably diluted before precipitation to obviate the difficulty of quantitative precipitation of bitartrate in the presence of magnesium salts.

RRL, HYDERABAD

Fat Splitting and Fatty Acid Distillation—A 100 kg. batch pilot plant for fat splitting and fatty acid distillation has been erected and put into operation. The structures and pipe lines, storage tanks, process lines, tracer lines and electrical panels were fabricated in the Laboratory workshop.

The plant is useful for studying the economics and technical feasibility of obtaining distilled fatty acids of high quality from low-grade fats, such as cottonseed soapstock and various minor oils containing obnoxious constituents. Distilled acids from linseed oil and dehydrated castor oil can also be produced in the plant.

Sponsored Research

Spectra of Molecules in Visible and Ultraviolet Regions—Systematic spectroscopic studies of a large number of diatomic molecules have been carried out in visible and ultraviolet regions using a vacuum graphite furnace capable of giving temperatures of the order of 2000°C. New and additional band systems have been observed in the following molecules: BiSe, SbTe, Te_2, GeO, TeS, TeO, SnBi, BiTe and SnS.

The polarised fluorescence of single crystals of hexamethylbenzene has been studied using a low

RRL, HYDERABAD—A view of the pilot plant set up in the Laboratory for fat splitting and fatty acid distillation

pressure quartz mercury vapour lamp with water cooled electrodes as the source of 2537A line of Hg for the excitation of fluorescence.

Theoritical study of the spectroscopic constants has led to the following results: (i) An improved form of Matuyama-Clark relation connecting the ground state frequencies of diatoms formed of the same element; (ii) relation between the vibration frequency of diatom XY and diatoms XX and YY; (iii) regular variation of vibration frequency and force constant in a molecular group; and (iv) resemblances in ground state vibration frequencies of iso-electronic diatoms belonging to the same molecular group and having 'reversed' closed shells.

Theoritical study of the structure of hydrogen halides has been carried out by semi-quantum mechanical method. The ionic characters are in agreement with those calculated by Pauling and Clark using entirely different methods—K. MAJUMDAR, M. S. SODHA, Y. P. VARSHNI & HARI MOHAN, Allahabad University, Allahabad.

Research Papers

EFFECTS OF CHLORIDE ON THE ORIENTATION OF NICKLE DEPOSITS—B.C. Banerjee & A. Goswami, NCL, Poona. *J. Electrochem. Soc.*, **106** (1959), 590-92.

MIXED AMYL ESTERS MADE FROM FUSEL OIL—P.G. Nerlekar & K.S. Srinivasan, NCL, Poona. *Chem. Age (India)*, **10** (1959), 449-51.

ANALYSIS AND UP-GRADING OF CASHEWNUT SHELL LIQUID—B.G.K. Murthy & J. S. Aggarwal, RRL, Hyderabad. *Paintindia*, **9** (1959), 26-29.

EXTRACTION DES ACIDES DE CONDION A PARTIES ESLDAQUE URS AMMONIACAL AN MOYEN DE I EXIRACIE CENTRIFUGE LUWESTA—S. Husain Zaheer, K.S. Chari, M.G. Krishna, Y.V. Subba Rao & S. A. Jaleel, RRL, Hyderabad. *Chim. et Industr.*, **82** (1959), 43-46.

SWELLING PRESSURES AND VOLUMES EXPANSIONS IN INDIAN BLACK COTTON SOILS—Dinesh Mohan & R.R. Goel, CBRI, Roorkee. *J. Instn. Engrs.* (India), **40** (2) 1959), 58-62.

PERSONAL

(*Contd. from p. 2, col. 3*)

Dr. Y.V.G. Acharya

DR. Y.V.G. ACHARYA has been appointed Assistant Director, National Aeronautical Laboratory, Bangalore with effect from July 25, 1959.

DR. ACHARYA (b. Oct. 31, 1921), B.E. (Mysore), Certificate of Proficiency in Aeronautical Engineering (Indian Institute of Science, Bangalore), D. Sc. Engg. (Delft, Holland) was formerly Aircraft Engineer, Tata Aircraft Ltd., Poona (1944-46); Lecturer, Aeronautics, Indian Institute of Science, Bangalore (1946-52); Chief Assistant, Laboratory for Aero & Hydrodynamics, Delft (1952-54); Post-Doctoral Fellow, Johns Hopkins University, Baltimore (1954-55); Senior Scientific Officer, Defence Science Organization (1955-57); and Professor of Mechanical Engineering, Birla Institute of Technology, Ranchi (1957-59). He is a Founder-Member of the *Aeronautical Society of India* and author of several memoirs on aerodynamics, propeller theory, turbulence, elasticity and plasticity.

Shri S.P. Venkiteshwaran

SHRI S.P. VENKITESHWARAN has been appointed Assistant Director, National Aeronautical Laboratory with effect from Oct. 30, 1959.

Born on Feb. 15, 1905 at Kerala, Shri Venkiteshwaran joined the India Meteorological Department in 1930 and was associated with the workshops and laboratories of the Department at Agra, Delhi and Poona. His last assignment in the Department was Deputy Director-General of Observatories. His researches are mainly connected with the designing, construction and testing of meteorological instruments.

Shri S. P. Venkiteshwaran has published more than 50 papers on instrumentation, radio meteorology, solar radiation and climatology.

PATENTS & PROCESSES

Applications Filed

INDIA

69617 : *A process for the extraction of phenols from coal tar oils and aqueous solutions*—M. B. Rey, P. K. Banerjee, A. N. Basu & A. Lahiri, CFRI, Jealgora.

69619 : *A mechanical area integrator for the measurement of the cross-sectional area of mine road-way or the like*—Md. Shamsuzzoha, CMRS, Dhanbad.

69780 : *Improvements in or relating to production of citric acid from sugarcane molasses*—B. S. Lulla & S. H. Zaheer, RRL, Hyderabad.

69781 : *Refining of cottonseed oil to light coloured products*—V. P. Harigopal, S. R. Rao, K. T. Achaya & S. H. Zaheer. RRL, Hyderabad.

69782 : *Improvements in or relating to production of citric acid from saccharine materials*—B. S. Lulla & S. H. Zaheer, RRL, Hyderabad.

FINLAND

1873/59 : *A temperature sensitive ceramic composition having medium permittivity and retraceable characteristics*—T. V. Ramamurti, C. V. Ganapathy, R. Krishnan, A. Ahmed & K. Vaitheswaran, NPL, New Delhi.

Applications Accepted

INDIA

63865 : *A tensioning screw jack*—Prof. G. S. Ramaswamy & S.K. Narayana, CBRI, Roorkee.

64366 : *Developments in or relating to the production of oils and fats having materials for detecting their adulteration and preservation against spoilage*—B. S. Joshi, NCL. Poona.

66194 : *Improvements in or relating to can-sealing composition*—D. Raghunath & S. L. Kapur, NCL, Poona.

Process Leased Out

The process for the production of *Bacterial Diastase for Desizing* (Indian Patent No. 66096) developed by the National Chemical Laboratory, Poona has been leased out for commercial exploitation to *Chemaux Private Ltd.*, Bombay.

Printed at Asia Press, Delhi-7, and Published by the Council of Scientific & Industrial Research, Old Mill Road, New Delhi-1.

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SIR NEWS

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TRAINING IN FOOD PRESERVATION

CFTRI Arranges Courses in Science Pavilion

Short (2 weeks) courses in the theory and practice of fruit and vegetable preservation have been arranged by the Central Food Technological Research Institute in the Science Pavilion of the World Agriculture Fair. Students of local colleges and staff of Community Development and National Extension Services are availing themselves of the facility provided. Fruit and vegetable products, such as fruit juices, squashes, jams, jellies, marmalades, *chutneys*, pickles, canned products, and selected dishes from Multipurpose Food and Tapioca Macaroni are prepared by students.

One of the exhibits displayed by CFTRI in the Pavilion is a working model of a Rice Bran Oil plant. Rice bran, available to the extent of 3 million tons a year, if processed, can yield more than 3 lakh tons of oil, besides sugar rich in B-vitamins, industrial wax and cattle feed.

SEMINAR ON ELECTROCHEMISTRY

A seminar on Electrochemistry will be held at the *Central Electro-Chemical Research Institute*, Karaikudi in the third week of March 1960.

Scientists and technologists desirous of participating in the Seminar by contributing research papers and notes relating to personal experience in the operation of electrochemical plants may send the abstracts (two copies) to Dr. A. Jogarao, Assistant Director (Convenor of the Seminar), Central Eelctro-Chemical Research Institute, Karaikudi, by **Jan. 15, 1960**. Detailed papers may be sent so as to reach by **Feb. 15, 1960**.

State Award for Research & Industry

Research and Industry has been awarded this year a Certificate of Merit for *Excellence in Printing and Designing*, in the competition organized by the Ministry of Information & Broadcasting. This journal is on display at the Exhibition of selected entries at Vigyan Bhavan, Maulana Azad Road, New Delhi.

Research and Industry is the only recipient of the State award under *Category 12: Periodicals* (*Other than Annuals*)—*English*. Dr. Rajendra Prasad, President of the Union, presented the award at a ceremony held at Vigyan Bhavan on Dec. 21, 1959.

Prof. M.S. Thacker

●PROF. M.S. THACKER, Director-General, Scientific & Industrial Research and Secretary, Ministry of Scientific Research & Cultural Affairs has been nominated a member of the *National Cooperating Committee* for *Arid Zone Research* set up under the Union Ministry of Food & Agriculture (Department of Agriculture).

●PROF. M. S. THACKER has accepted the Chairmanship of the *Scientific Sub-Committee* of the Executive Council, CFRI, Jealgora.

PERSONAL

●SHRI B.C. RAYCHOUDHURI has been appointed, on promotion, Senior Scientific Officer : Grade II, CBRI, Roorkee, with effect from Nov. 6, 1959.

●DR. INDRA SANGHI Senior Scientific Officer : Grade II, CECRI, Karaikudi has been appointed Senior Scientific Officer : Grade I, CBRI, Roorkee, with effect from Nov. 18, 1959.

●SHRI K.G.R.S. JAIN has been appointed, on promotion, Junior Scientific Officer, CBRI, Roorkee, with effect from Nov. 9, 1959.

●SHRI R. NARAYANAN has been appointed Stores Verification Officer, CSIR, with effect from Nov. 2, 1959.

●SHRI CHETANANAND has been appointed Stores Verification Officer, CSIR, with effect from Dec. 15, 1959.

●SHRI T.N. GOVILA has been appointed, on promotion, Section Officer, CEERI, Pilani, with effect from Dec. 1, 1959 *vice* Shri E.N. Ray transferred to CFTRI, Mysore.

* * *

●DR. B.R. NIJHAWAN, Director, NML, Jamshedpur returned to

(*Contd. on page 2, col. 2*)

Trainees preparing fruit and vegetable products at CFTRI Pavilion, World Agriculture Fair

BRIEFS

Microwave Spectroscopy and Nuclear Magnetic Resonance

The proceedings of the symposium on 'Microwave Spectroscopy and Nuclear Magnetic Resonance' sponsored by the Physical Research Committee of the CSIR and held at the Muslim University, Aligarh between Feb. 23-25, 1959 have been brought out.

The cyclostyled proceedings include the abstracts of twenty-three papers presented and discussed at the symposium. Of these, nine papers deal with nuclear magnetic resonance, five with electron paramagnetic resonance and seven with microwave gaseous spectroscopy.

Hindi Publications

Two popular illustrated brochures in Hindi entitled *Kala Sona* and *Achhi Sarakon Ki Aur* have been brought out highlighting the activities of the Central Fuel Research Institute, Jealgora and Central Road Research Institute, New Delhi.

Copies of the brochures are available from the Under Secretary, Publications Directorate, Council of Scientific & Industrial Research, New Delhi-1.

Research Fellowships

The following have been awarded *CSIR Research Fellowships* for work on research schemes noted against their names.

Senior Fellowships :

1. Dr. (Miss) Rama Bhattacharya—*Physicochemical studies in Indian silk* (University College of Science & Technology, Calcutta).
2. Dr. Asok Nath Lahiri—*Biosynthesis and metabolism of Gibberellic acid* (Bose Institute, Calcutta).
3. Shri Sukumar Das—*Studies in the biosynthesis of fats* (University College of Science & Technology, Calcutta).
4. Kumari Ranjan Mehta—*Cofactors in protein biosynthesis* (Haffkine Institute, Bombay).
5. Shri B.K. Saxena—*Determination of specific heats of new materials for blast furnace* (Banaras Hindu University, Varanasi).
6. Dr. B.P. Singh—*Determination of spin and parities etc.* (Muslim University, Aligarh).

Junior Fellowships :

1 & 2. Shri Gurupada Dass & Shri Jagdish Chandra—*Theory of strong electrolytes* (University College of Science, Calcutta).

3. Shri Balaram Das—*Studies in the biosynthesis of fats* (University Collegeof Science & Technology, Calcutta).

4. Shri Y.P. Singh Bajaj—*Physiology of fruit growth* (Delhi University, Delhi).

5. Shri Munishwar Chandra Nigam—*Essential Oils Research Centre* (H.B. Technological Institute, Kanpur).

Research Schemes

The research scheme, *Botanical Survey of Mahableshwar and Dangs Forest* (Investigator-in-charge, Prof. H. Santapau, St. Xaviers College, Bombay) has been terminated with effect from Nov. 30, 1959.

* * *

Dr. K.S. Narang, Reader in Organic Chemistry, Panjab University College, Hoshiarpur will supervise the research scheme, *Studies on terpenes and terpenoids*, vice Dr. S.M. Mukherji retired from the University.

PERSONAL

(*Contd. from page 1, col. 3*)

India on Dec. 3, 1959 after the study tour to France under the Indo-France Economic and Technical Cooperation Agreement. He also visited U.K., Germany and other European countries.

* * *

●Dr. Y. Nayudamma, Director, CLRI, Madras, has been elected a member of the *Council of Institution of Chemists* (*India*) for 1960-62.

●Dr. L.A. Ramdas, Asst. Director, NPL, New Delhi, and a member of the Unesco Arid Zone Committee has been nominated a member of the *National Cooperating Committee* for *Arid Zone Research*, Union Ministry of Food & Agriculture.

●The following officers have been nominated members of the Committee/Panel of the *Indian Standards Institution.*

Dr. J. L. Uppal, Asst. Director and Shri T.K. Natrajan, Senior Scientific Officer, CRRI, New Delhi (Principal and Alternate Members respectively)—*Northern Zone Sub-Committee.*

Shri Dinesh Mohan, Asst. Director, CBRI, Roorkee—*Northern Zone Sub-Committee.*

Dr. D.S. Bhatia, Asst. Director, CFTRI, Mysore—*Cereal Products Sub-Committee.*

Shri Prem Prakash,, Asst. Director, NPL, New Delhi— *Precision Measuring Equipment, Gauges, Surface Finish* and *Standard Temperature Sub-Committees* of the Engineering Metrology Sectional Committee.

Dr. A.K.N. Reddy and Dr. A. Viswanathan, Senior Scientific Officers, CECRI, Karaikudi (Principal and Alternate Members, respectively)—*Electro-technical Standards Sectional Committee.*

Dr. A. K. N. Reddy, Senior Scientific Officer, CECRI, Karaikudi—*Nomeculature and Graphical Symbols Sub-Committee.*

Shri R.V. Lele, Senior Scientific Officer (Principal Member) and Dr. S. Mondal, Junior Scientific Officer (Alternate Member), CGCRI, Calcutta—*Electrical Insulators & Accessories Sectional Committee* and *Fuses Sub-Committee.*

Shri R.V. Lele, Senior Scientific Officer, CGCRI, Calcutta—*Terminology Panel.*

Shri K.T. Sirkar, Senior Scientific Officer and Shri P.S. Venkatachalam, Junior Scientific Officer, CLRI, Madras—*Picking Bands, Buffers, Pickers* and *Buffer Bands for Automatic Looms Sub-Committees* of the Textile Mill Leather Articles Sectional Committee.

Shri C.S. Ranjan, Senior Scientific Officer, NPL, New Delhi—*Electronics Measuring Instruments Sub-Committee.*

●Shri R.N. Kulkarni Senior Research Fellow (CSIR Scheme, *Atmospheric Ozone & Weather*, Physical Research Laboratory, Ahmedabad) has been awarded the Ph.D. Degree by the Gujrat University for his thesis, *Studies on Atmospheric Ozone.*

RESEARCH IN PROGRESS

National Laboratories

NML, JAMSHEDPUR

Production of Magnesium Powder—Experiments carried out at the Laboratory have indicated the possibility of preparing magnesium powder of any desired specification by milling magnesium turnings. Practical trials on the utilization of the powder for making bullets are being undertaken at the High Explosives Factory, Kirkee.

CGCRI, CALCUTTA

White Enamel for Steel Coating—Direct one coat white enamel compositions and the technique for their application on steel have been developed. Smooth and glossy finish of enamels on steel is obtained without using the conventional ground coat enamels. The adherence, reflectance, opacity and gloss of the coating compare favourably with those of conventional vitreous enamel finishes. The quantity of the enamel required for coating steel is equal or even less than that of conventional white cover coat used over a ground coat enamel. Use of the new enamel has been estimated to bring about 50 per cent reduction in the cost of production of enamelware.

Colour in Glasses Containing Iron Group Ions—Glasses containing iron group ions were studied spectrophotometrically in the ultra-violet, visible and infra-red regions. The results indicated that the colour in these glasses was due to the presence of certain characteristic absorption bands in or around the visible region of the spectrum.

Application of quantum mechanical considerations offered an explanation for the origin of absorption bands and magnetic measurements also led to the same conclusions. The number and position of absorption bands were successfully predicted from theory.

Thermal Expansion—An equation correlating thermal expansion with specific heat and potential energy of crystals was derived from thermodynamic considerations. This equation was found to be applicable to a large variety of crystals including magnesium oxide, spinels, fluorite, corundum and alkali halides.

In the case of quartz, however, the experimental value of thermal expansion was significantly higher than that calculated from the equation. This difference was explained as due to rotational movements of (SiO_4) tetrahedra in the lattice.

An additive equation was also derived for calculating thermal expansion of glass from its chemical composition. Using this equation, the diagram of thermal expansion versus composition was drawn for the system Na_2O—B_2O_3—SiO_2. The diagram was useful in explaining the boric oxide anamoly in borosilicate glasses.

Sponsored Research

Vinyl Chloride From Ethylene Dichloride—A process for gaseous phase dehydrochlorination of ethylene dichloride using a fluidized bed of catalyst has been developed. The process is simple in operation gives high yield per pass conversion and produces pure vinyl chloride uncontaminated with any other thermal degradation products.

The process has been studied both on a small pilot plant (capacity, 14 lb./hr.) and is also being operated on a bigger unit capable of producing 20-30 lb./hr of vinyl chloride.

Investigations were also carried out for the polymerization of vinyl chloride and utilization of by-product hydrochloric acid by condensing it with ethylene to vinyl chloride—R.K. Bhatnagar & N. R. Kuloor, Shri Ram Institute for Industrial Research, Delhi.

Cytogenetic Investigations in Chlorophytum—Studies on the cytology of four varieties of *Chlorophytum*, viz. *Chlorophytum tuberosum*, *C. elatum* (two different varieties) and *C. heynei* collected from Madras, Trivandrum and Aryankavu respectively have been in progress.

Reciprocal translocation has been detected in *C. heynei*, The somatic chromosome number in this species has been found to be 2n=14. The size of chromosomes vary from 6.6 to 12.4m in length. The karyotype analysis of the species shows that there are seven homologous pairs in the normal somatic complement. Of these three pairs are metacentric with one pair showing satellites. Among the remaining four pairs, three have sub-median attachment and include the longest pair in the set, while the shortest pair has sub-terminal centromere. Translocation has also been noticed in pollen mother cells of *C. elatum*

Hybridization work between different combinations of *C. heynei*, *C. elatum*, *C. orchidastrum* and *C. laxum*, which have not been tried before is in progress—A. Abraham & K. G. Thomas, University of Kerala, Trivandrum.

Radio Waves from Ionosphere—The angle of arrival of the down-coming radio waves from ionosphere has been measured by phase difference method.

Two parallel horizontal dipole aerials of equal height were erected at aerial spacing of operating wavelength. The aerials were connected to two superheterodyne receivers fed by an oscillator. A cathode ray oscillograph was used for obtaining the phase ellipses.

The angle of arrival of radio waves from Delhi was calculated from these ellipses. The value agreed well with the theoretical value for first order reflection. It was inferred from the predominance of the ellipses giving this angle that the most probable mode of propagation from Delhi to Banaras is by single order reflection from the ionosphere. Similar observations for other stations are in progress—S. S. Banerjee & P. K. Mukerji, Banaras Hindu University, Banaras.

Fractionation of Fatty Material by Clathrate Compounds—A method has been worked out for the estimation of saturated acids in vegetable oils by brominating the mixed fatty acids and separating the saturated acids with urea. The method is better than other (lead-salt and Bertram) methods as it is quicker and accounts for all the saturated acids—T. N. Mehta, Laxminarayan Institute of Technology, Nagpur.

RESEARCH PAPERS

Diosgenin from Dioscora prazeri by the method of Rothroch et al—R. N. Chakravarti & M.N. Mitra, School of Tropical Medicine Calcutta. *J. Instn. Chem.*, **31** (1959), 218.

A new method of preparation of Diosgenone—R. M. Chakravarti, & M.N. Mitra, School of Tropical. Medicine, Calcutta. *Bull. School Trop. Med.*, **7** (1959), 145.

Thermal expansion and composition of glass—S. Kumar, CGCRI, Calcutta. *Glastechnische Berichte*-V: International Glass Congress, **32K** (1959), 26-32.

Metallurgical coal for the steel industries—N.N. Das Gupta, CFRI, Jealgora. *Golchha Souvenir 1959*—The Steel Plants in India, 95-103.

Studies on the thickness of the plastic layer of coals—S.K. Sharma & N.N. Dass Gupta, CFRI, Jealgora. *J. Mines Metals Fuels*, **7** (8) (1959),6.

Foundry coke—N. N. Das Gupta, CFRI, Jealgora. *Indian Foundry J.*, **5** (5) (1959), 6-9.

Soil engineering research and testing laboratories in the United Kingdom and Europe—Dinesh Mohan, CBRI, Roorkee. *Bull. Instn Engrs*, **9** (2) (1959), 1-11.

Wire drawing—Ved Prakash, NML, Jamshedpur. *Tisco*, **6** (1959), 215-23.

Extrusion of metals – S. S. Bhatnagar & P. K. Gupte, NML, Jamshedpur. *Tisco*, **6** (1959), 225-33.

Surface finishing and clading of metals—Part I: Surface finishing of metals—B. N. Das, NML, Jamshedpur. *Tisco*, **6** (1959), 267-71.

Cold working and recovery textures—E. G. Ramachandran & K.D. Maji, NML, Jamshedpur. *Tisco*, **6** (1959), 272-79.

Measurement of internal stresses in metals and alloys—A.B. Chatterjee, N M L, Jamshedpur. *Tisco*, **6** (1959), 280-89.

Special metal working technique—B.R. Nijhawan, NML, Jamshedpur. *Tisco*, **6** (1959), 290-98.

PATENTS & PROCESSES

Applications Filed

69618: *Improvements in and/or relating to the preparation of perchlorates using lead dioxide anodes*—H.V. Udupa & K.C. Narasimhan, CECRI, Karaikudi.

69620: *Blowing agent for cellular rubbers and plastics*—R.G. Gokhale & U. Shankar, NCL, Poona.

69690: *Improvements in or relating to paints*—Atma Ram, S.B. Roy & H.D. Sircar, CGCRI, Calcutta.

69697: *An improved batch-type spin-cooker-coller (pasteurizer) for the processing of canned acid foods*—J.S. Pruthi, P.K. Ramanathan & Girdhari Lal, CFTRI, Mysore.

69698: *A process for the preparation of 2,3-disubstituted 4-(3H)- quinazolones*—S.H. Zaheer & I.K. Kacker, RRL, Hyderabad.

69986: *Improvements in or relating to aluminium paints*—Atma Ram, S.B. Roy & H.D. Sircar, CGCRI, Calcutta.

Applications Accepted

India

64168: *Improvements in or relating to centrifugal pumps*—N.S. Govinda Rao, K. Seetharamiah & H.C. Radhakrishna, Indian Institute of Science, Bangalore.

64541: *A fabricated bamboo structure for use as springs or beams*—V.S. Goel, CRRI, New Delhi.

65282: *Improvements in or relating to crease and shrink proofing of cellulosic textiles*—V.B. Chipalkatti, K.V. Ramalingam, N.B. Sattur & E. Syamalarao, Shri Ram Institute for Industrial Research, Delhi.

U.K.

11417/58: *A process for the preparation of azealic acid semi-ester suitable for making civetone dicarboxylic acid*—U.G. Nayak, K.K. Chakravarti & S.C. Bhattacharyya, NCL, Poona.

France

766718: *A process for the preparation of tridecanel-1: 13-dicarboxylic acid or its ester suitable for the preparation of exaltone (cyclopentadecanone)*—B.B. Ghatgey, U.G. Nayak, K.K. Chakravarti & S.C. Bhattacharyya, NCL, Poona.

Processes Ready for Exploitation

Ethylene Dichloride

The *National Chemical Laboratory*, Poona, has developed a process (Indian Pat. No. 66836) for the production of ethylene dichloride starting from ethylene and chlorine. Ethylene dichloride is a basic starting material for the production of vinyl chloride used in the manufacture of a variety of vinyl plastics.

In this process, the two gases are allowed to react in a turbo-absorber reactor which is easy to operate and gives a high output (90 per cent) of the product besides keeping the maintenance cost low. A process for the manufacture of ethylene from alcohol using bauxite as catalyst has also been worked out.

Parties desirous of undertaking the commercial development of the process may write to the Secretary, National Research Development Corporation of India, Mandi House, New Delhi-1.

Garlic Powder

The *Central Food Technological Research Institute*, Mysore, has developed an improved process (Indian Pat. No. 65138) for making garlic powder. The product, which can be used both as a condiment and in the manufacture of pharmaceutical preparations, possesses better colour, flavour, antibacterial activity and pharmaceutical properties than that prepared by the conventional method.

The process consists in removing the outer papery skin of garlic and separating the cloves, subjecting them to mechanical treatment in twin or triple roll mill and dehydrating. Dried and cleaned cloves are powdered to desired mesh-size and packed in air-tight containers. The process effects considerable saving in labour and reduces the dehydration time by 25-30 per cent.

Parties interested in taking up the commercial development of the process may correspond with the Secretary, National Research Development Corporation, Mandi House, New Delhi-1.

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CSIR NEWS

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LIBRARY
MYSORE

MEETINGS & SYMPOSIA

A meeting of the *Geological & Mineralogical Research Committee* will be held in the Geology Department, Andhra University, Waltair on Feb. 12, 1960 at 11.00 a.m. Dr. D.N. Wadia, Geological Adviser to the Department of Atomic Energy will preside.

High Polymers

A symposium on 'High Polymers' will be held under the auspices of the *Chemical Research Committee* of the CSIR at the Indian Association for the Cultivation of Science, Calcutta, on Jan. 30-31, 1960.

Solid State Physics

A symposium on 'Solid State Physics' will be held at the Indian Institute of Science, Bangalore, on Feb. 1-3, 1960. The symposium has been sponsored by the *Physical Research Committee* of the CSIR.

Prof. M. S. Thacker

PROF. M.S. THACKER, Director-General, Scientific & Industrial Research has been nominated a member of the *Panel on Education* constituted by the *Planning Commission* for reviewing the progress of the Second Five-Year Plan in the field of education and advise on the formulation of proposals for the Third Five-Year Plan.

PROF. M.S. THACKER has been nominated a member of the newly constituted *Executive Council* for the *Research Institute* of the *Silk & Art Silk Mills' Research Association*, Bombay.

PERSONAL

●SHRI S. MAZUMDAR has been appointed Senior Scientific Officer : Grade I, CFRI, Jealgora, with effect from Nov. 21, 1959.

●SHRI B.R. SUBRAMANYAM has been appointed Senior Scientific Officer : Grade I, CRRI, New Delhi, with effect from Jan. 2, 1960.

●SHRI P. JAGANNATH RAO has been appointed Senior Scientific Officer : Grade II, CRRI, New Delhi, with effect from Nov. 4, 1959.

* * *

●SHRI T. R. SEHGAL, Junior Scientific Officer, CRRI, New Delhi, left for U.K. on Oct. 3, 1959 for training in *Statistics as Applied to Road Traffic Problems* at the Imperial College of Science and Technology, London, under Colombo Plan.

* * *

●DR. K. VENKATARAMAN, Director, NCL, Poona has been nominated a member of the newly constituted *Executive Council* for the *Research Institute* of the *Silk & Art Silk Mills' Research Association*, Bombay.

●DR. K.N. MATHUR, Director, Central Scientific Instruments Organization (CSIO) has been appointed a member of the *Development Council* for *Instruments, Bicycles and Sewing Machines*, Ministry of Commerce and Industry.

●DR. J.C. RAY, Director, IIBEM, Calcutta, has been elected the President of the *Association of Microbiologists*, India for three years.

●DR. J.C. Ray has been appointed a member of the Scientists' Committee to examine the working of the *Hindustan Antibiotics Ltd.*, Pimpri.

●The following officers have been nominated members of the Panel/Committee of the *Indian Standards Institution :*

DR. A. LAHIRI, Director (Principal Member) and SHRI N.N. DAS GUPTA, Asst. Director (Alternate Member), CFRI, Jealgora—*Panels for Coke Consumed in Blast Furnaces, Coke Consumed in Cupolas, Coke Consumed in Gas Producers and Soft Cokes* (Composition of Panels of Coke Sub-Committee).

DR. M.L. Khanna, Senior Scientific Officer, NPL, New Delhi—*Greases and Waxes Sub-Committee.*

SHRI R.K. TANDON, Senior Scientific Officer, NPL, New Delhi—*Electro-Technical Division Council.*

●The following officers of the CLRI, Madras have been nominated as alternate member to Shri M.A. Ghani, Senior Scientific Officer, CLRI, on the Sub-Committee/Panel of the Indian Standards Institution.

SHRI J. B. RAO, Junior Scientific Officer—*Medium and Light Substances Finished Leather Sub-Committee* and *Panel for Sodium Sulphide, Silicate and Bichromates.*

SHRI G.S. RAMA IYER, Senior Scientific Officer—*Leather Finishes Sub-Committee.*

●SHRI G.R. CHAUDHRY, Junior Scientific Officer, NBG, Lucknow, has been elected a Fellow of the *Royal Institute of Chemistry.*

●SHRI G.R. CHAUDHRY has been awarded the Ph.D. Degree by the Delhi University for his thesis, *Chemical Examination of Some Indian Medicinal Plants and Studies on the Chemical Constitution of their Physiologically Active Constituents.*

Dr. K. N. Mathur

Dr. K. N. Mathur, D.Sc. (Allahabad), F. Inst. P., F.N.A. Sc., A.R.P.S., Director, Central Scientific Instruments Organization, was born at Agra on July 5, 1901. After a distinguished academic career, he worked in the post-graduate research and teaching departments in the universities of Panjab (1925-30) and Lucknow (1930-44). During 1938-39, he carried out research work at the H. H. Wills Physics Laboratory, Bristol.

Dr. Mathur joined the CSIR in 1944 as Assistant Director for Planning the National Physical Laboratory. He was Head of the Division of Weights & Measures and was promoted as Deputy Director of the Laboratory in 1953.

(*Contd. on p. 4, col. 1*)

BRIEFS

Shell Structures

A symposium on 'Shell Structures' was held at the Central Building Research Institute, Roorkee during Jan. 11-13, 1960. Prof. M. S. Thacker, Director-General, Scientific & Industrial Research, inaugurated the symposium.

A large number of papers contributed by Indian and foreign scientists and engineers was presented and discussed in the following four technical sessions: (i) Analysis and design; (ii) Construction; (iii) Research; and (iv) Economics. Dr. K.L. Rao, Shri E.A. Nadirshah, Dr. K. Hajnal Kanyi and Lt. Gen. H. Williams presided over the technical sessions.

Detailed papers presented at the symposium have been published in the December 1959 Special Issue of the *Indian Concrete Journal.*

NBG Bulletins

The National Botanic Gardens, Lucknow, issued 21 bulletins (Nos. 26-28 and 30-47) on plants of economic, medicinal and ornamental importance during 1959. The bulletins give information on the forms and types of plants, flowering period, their propagation, suitable soils and situations, cultural practices to be adopted at various stages of growth, hybrids, pests and diseases and their prevention. The plant Genera included in the bulletins are: *Gloriosa; Barleria; Legerstroemia; Ipomoea; Codiaeum; Jatropha; Calathea* and *Maranta; Cosmos; Althaea* (Hollyhock); *Buddleia*; *Pentas: Ruellia; Aralia; Bignonia; Bougainvillea; Cordylines and Dracaenas; Ervatamia; Dombeya*; Orchids; *Sansevieria* and Palms.

A brief account of Indian medicinal ferns including their distribution, uses, and specific characters by which they may be distinguished in the field has been given in Bulletin No. 29. Ferns of the following Genera are described: *Actinopteris, Adiantum, Asplenium, Athyrium, Botrychium, Cheilanthes, Cibotium Dryopteris, Drymoglossum, Drynaria, Helminthostachys, Hemionites, Lygodium, Lycopodium, Ophioglossum, Osmunda, Pleopeltis, Polypodium, Pteridium, Sphenomeris, Stenochlaena* and *Tectaria.*

Copies of the bulletins are available from the Director, National Botanic Gardens, Lucknow.

Ceramic Condensers by the Million

A 16-page brochure on the activities of the Radio Circuits & Components Development Section of the National Physical Laboratory, New Delhi has been published.

The illustrated brochure traces the progress of research and development leading to the production of ceramic condensers on a pilot plant scale using indigenous raw materials. The methods of production of silvered mica capacitors, thermocaps, magnetoceramics and their varied uses have been briefly described.

CSIR Aid to Cooperative Research Associations

The Governing Body of the CSIR has approved the following pattern of financial assistance to the cooperative research associations formed by industries: (i) A non-recurring grant not exceeding $\frac{1}{3}$ of the total capital cost of the project subject to a maximum of Rs. 15 lakhs and (ii) a recurring grant not exceeding half the annual recurring expenditure subject to a maximum of Rs. 5 lakhs.

A capital grant of Rs. 10 lakhs and a recurring grant up to Rs. 5 lakhs per annum has been made to the *Institute* of the *Silk & Art Silk Mills' Research Association,* Bombay.

Research Fellowships

The following have been awarded *CSIR Fellowships* for research on projects noted against their names:

Senior Fellowships

1. Dr. A. C. Chatterjee—*Investigation on steroids* (Jadavpur University, Calcutta).
2. Shri Sitapati Rao—*Regional gravity and magnetic investigations in parts of Gondwana formations in the Godavary valley, Andhra Pradesh* (Andhra University, Waltair).
3. Shri N. Dwarkanath—*Axial flow pump research* (Indian Institute of Science, Bangalore).

Junior Fellowships

1. Shri S. N. Patnaik—*Cytological and taxonomic studies in the Polypodiaceae of Eastern India* (Botanical Survey of India, Shillong).
2. Shri N. Krishna Brahman—*Regional gravity and magnetic investigations in parts of Gondwana formations tn the Godavary valley, Andhra Pradesh* (Andhra University, Waltair).
3. Dr. Shaligram—*Pharmacological Research Unit* (Medical College, Baroda).
4. Kumari Afzal Murid—*Studies in proteins and certain B vitamins inter relationship* (Haffkine Institute Bombay).

Research Schemes Terminated

The following research schemes by Shri N. Subbian, P.S.G. College of Technology, Coimbatore have been approved for termination with effect from Feb. 29, 1960.

(1) *Smooth variable a.c. motors and multispeed a.c. motors;* (2) *Development of master frequency changer*; and (3) *Magnetic saturation in induction meters.*

Research Papers

Chemical composition of essential oil from ferula jaeschkeana roots from plants growing in Jammu & Kashmir—K.L. Handa & S. S. Chaudhary, RRL, Jammu, *Indian J. Pharm.*, **21** (1959), 39.

Purification and properties of phosphoglucose isomerase from A. niger—Kartar Singh, NCL, Poona. *Canad. J. Biochem.*, **37** (1959), 927.

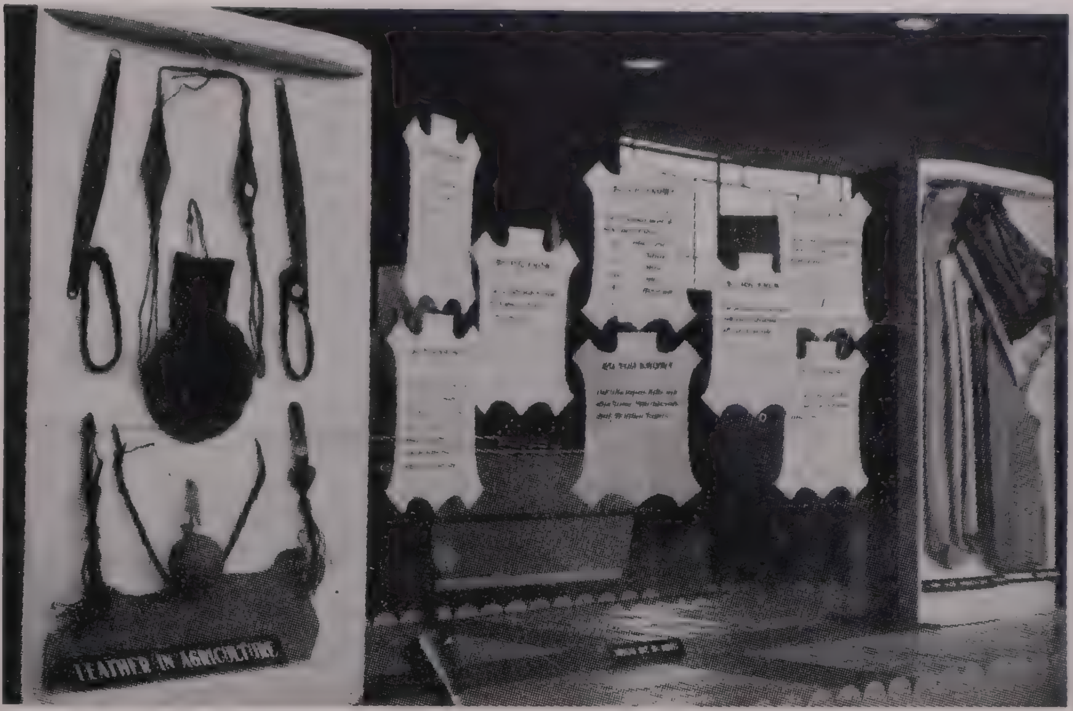
Graft polymerisation of methyl methacrylate with natural rubber in emulsion—C.C. Menon & S. L. Kapur, NCL, Poona. *J. appl. poly. Sci.*, **1** (1959), 372.

Chlorination of ilmenite in a fluidized bed—L.K. Doraiswamy, H.C. Bijawat & M.V. Kunte, NCL, Poona. *Chem. Engg. Prog.*, **55** (10) (1959).

Synthesis of fatty acids—S.C. Bhatacharyya, K.K. Chakravarty & Virendra Kumar, NCL, Poona. *Chem. & Ind.*, (1959), 1352.

Mixed amyl esters made from fusel oil—P.G. Nerlekar & K.S. Srinivasan, NCL, Poona. *Chem. age (India)*, **10** (1959), 449-51.

RESEARCH IN PROGRESS



A section of the exhibits displayed by CLRI, Madras at the Science Pavilion, World Agriculture Fair, New Delhi showing various leather articles used by Indian farmers (left) and leather samples finished by processes developed in the Institute (right). Part of the flooring of the stall is covered with leather board made from leather waste.

National Laboratories

RRL, HYDERABAD

Coal Carbonization—The operation data of the Lurgi-Spuelgas Pilot Plant (capacity, 25 tons/day) working at the Laboratory have been utilized in the preparation of a project report for the establishment of an industrial low temperature carbonization plant (capacity, 800-1600 tons/day) for carbonizing sized coal (2-6 in.) from Kothagudam coalfields (Andhra Pradesh) and Jambad mines in Raniganj. The project will provide economic and costing data for the establishment of a pilot plant at Hyderabad as part of the Third Five-Year Plan programme for setting up low temperature carbonization plants in different parts of the country.

Pyrometric Cones—A process for the manufacture of standard pyrometric cones for temperature range between 800-1400°C. has been worked out.

Sponsored Research

Pentaerythritol—A process for the manufacture of pentaerythritol starting from alcohol and formaldehyde has been developed. The process consists in first preparing acetaldehyde from alcohol by dehydrogenation method and later condensing it with formaldehyde to give pentaerythritol.

Complete details have been worked out for preparation of acetaldehyde by three different techniques, (i) static bed catalyst system ; (ii) a fluidized bed catalyst system ; and (iii) a proposed combined fluidized bed static bed method. Conversions of the order of 50-55 per cent per pass on alcohol basis have been obtained.

Optimum conditions for the synthesis of pentaerythritol to obtain highly purified product containing more than 99.9 per cent mono-pentaerythritol have been worked out. Yields of the order of 60 per cent on acetaldehyde basis have been obtained.

A pilot plant for producing ½ ton per day acetaldehyde has been designed and fabricated, and it is proposed to put up large-scale pentaerythritol synthesis unit—V.V. Deshpande & J.K. Mahendra, Shri Ram Institute for Industrial Research, Delhi.

Nuclear Geology—The radioactivity of rocks, plants and soils have been studied using alpha scintillation method. The radioactivity of several samples of Mosaboni copper ore taken from various levels of the mine has been determined. No linear relationship between copper content and alpha activity was observed and the results indicated that uranium and copper were not deposited simultaneously.

The alpha activity of different parts (ashes of roots, stem and leaves) of *Ipomea biloba* Forsk, *Spinifex squarrosus* and *Tephrosia purpurea* collected from Visakhapatnam coastal strip has been determined. Detechable amounts of uranium have been found in all the parts of these plants.

Six different types of soil samples (saline, loamy and sandy) have been collected from the Visakhapatnam areas and analysed for their leachable uranium content, both by alpha scintillation counting system as well as by paper chromatographic methods. A clearly detectable level of alpha activity and equivalent uranium content was present in these samples—C. Mahadevan, Andhra University, Waltair.

Enzymes in Toxic Action of Venom—Mechanism of inhibition of energy metabolism in animal tissues by cobra venom has been studied. Experiments with liver submitochondrial fragments have shown that the venom has no direct action on the enzyme system concerned with ATP synthesis and that the inhibitory effect is produced through its action on the mitochondrial structure.

The nature of the factor responsible for the inhibitory effects of cobra venom on tissue enzymes has been investigated. Crystalline lecithinase A prepared from cobra venom has destructive effects on the oxidative synthesis of ATP as well as on the structure of mitochondria. The finding indicates that lecithinase A is responsible for inactivating effects of cobra venom. Quantitative studies on toxicity have demonstrated that lecithinase A is an important toxic component of cobra venom and that factors other than lecithinase A may contribute to the overall toxic picture produced by cobra venom in the intact animal—B.M. Braganca & I. Aravindakishan, Indian Cancer Research Centre, Bombay.

(*Contd. from p. 1, col. 3*)

Dr. Mathur has been closely associated with the work of the Indian Standards Institution ever since its inception through its various Committees and Divisonal Councils. He has been a member of the Indian Committee of the International Electrotechnical Commission and Chairman of the Sieves Sectional Committee and the Metrology Committee. Important among the other special Committees whose membership Dr. Mathur has held are : the Technical Committee of the Government Housing Factory (1950) ; Japanese Cables Enquiry Committee (1953); the Science Sub-Commission for India, Unesco (1954-58) ; Film Enquiry Working Committee for setting up a Films Institute in India (1955) ; Committee for Reorganization of Customs Control Laboratories, Ministry of Finance (1957); and the Scientific Instruments Committee of the Government of India (1956-59).

Dr. Mathur has represented India in a number of International Conferences. In 1946 he was a delegate to the Royal Society Empire Scientific Conference and the British Commonwealth Scientific Conference, the Commonwealth Standards Conference and International Standards Conference. He also represented India at the Sixth Session of the Unesco General Conference, Paris (1951) and the International Symposium on Applied Solar Energy, Tuscon (1955).

Besides a large number of research papers on magnetism and magnetochemistry, Dr. Mathur has to his credit two books on magnetochemistry : (i) *Physical Principles and Applications of Magnetochemistry* (jointly with Dr. S. S. Bhatnagar) and (ii) *Magnetochemistry in Relation to Chemical Problems.*

PATENTS & PROCESSES

Applications Filed

INDIA

70151 : *Improvements in or relating to the utilization of oxidized coal*—A.K. Banerjee, P.N. Mukherji & A. Lahiri, CFRI, Jealgora.

70169 : *Improvement relating to the method of preparation of anhydrous magnesium chloride*—H. C. Gaur & W. K. Behl, University of Delhi, Delhi.

70170 : *A new process for the prevention of formation of adherent scales on the bubble caps of alcohol rectifying columns*—S. Ramachandran & S. R. Rajagopalan, CECRI, Karaikudi.

70171 : *A process for the isolation of levulinic acid in its preparation from carbohydrate materials, such as molasses*—C.N. Rao, C.C. Reddy, G.S. Sidhu, I.K. Kacker & S. H. Zaheer, RRL, Hyderabad.

70173 : *Two-wire anchorage crips*—G. S. Ramaswamy & S. K. Narayana, CBRI, Roorkee.

JAPAN

38359/59 : *A temperature sensitive ceramic composition having medium permittivity and retraceable characteristics*—T. V. Ramamurti, C.V. Ganapathy, R. Krishnan, A. Ahmed & K. Vaitheswaran, NPL, New Delhi.

Applications Sealed

61484 : *Improvements in or relating to the refining and utilization of cottonseed oil*—T.R. Seshadri & K. Chander, University of Delhi, Delhi.

62262 : *Improvements in or relating to the detoxification of cottonseed products such as cottonseed meal or cottonseed flour*—T.R. Seshadri & K. Chander, Delhi University, Delhi.

62292 : *Electrowinning of zinc and recovery of elemental sulphur from zinc sulphide ores*—V. Aravamuthan & R. Srinivasan, CECRI, Karaikudi.

62293 : *Electrowinning of zinc by electrolysis of zinc chloride solution*—V. Aravamuthan & Srinivasan, CECRI, Karaikudi.

62379 : *Improvements in or relating to the electrolytic preparation of manganic sulphate*—H.V. Udupa, M.S. Venkatachalapathi & R. Ramaswamy, CECRI, Karaikudi.

62426 : *A process for the oxidation of toluene to benzaldehyde*—H.V. Udupa, M.S. Venkatachalapathi & R. Ramaswamy, CECRI, Karaikudi.

Process Ready for Exploitation

PHENYLACETIC ACID AND PHENYLACETAMIDE

The *Regional Research Laboratory, Hyderabad* has standardized conditions for the production of phenylacetic acid and phenylacetamide starting from toluene. The present requirement of these chemicals, which are mainly used as promotors for the fermentative production of benzyl penicillin and in perfumery industry, is met from imports.

All the raw materials (toluene, chlorine, ethyl alcohol, sulphuric acid and sodium cyanide), except sodium cyanide are indigenously produced. Benzyl chloride, hydrochloric acid and spent sulphuric acid are obtained as by-products in the process.

The capital outlay for a plant capable of producing 2 tons of the acid or amide per day is estimated to be Rs. 16 lakhs.

Parties desirous of undertaking the commercial development of the process may write to the Secretary, National Research Development Corporation, Mandi House, New Delhi-1.

Process Leased out

Process for the manufacture of *Improved Clay Bonded Graphite Crucibles* (Indian Patent No. 62352) developed by the National Metallurgical Laboratory, Jamshedpur has been leased out for commercial development to *Patna State Graphite Mining Co.*, Titilagarh.

NEW PUBLICATION

CERAMIC CONDENSERS BY THE MILLION

An illustrated brochure outlining the activities of the Radio Circuits & Components Development Section of the National Physical Laboratory, New Delhi.

Copies available from :

Shri T. V. Ramamurthi, National Physical Laboratory,
New Delhi-12.

Printed at Asia Press, Delhi-7 and Published by the Council of Scientific & Industrial Research, Old Mill Road, New Delhi-1.

R.N. 4212/57

CSIR NEWS

VOL. 10 NEW DELHI—FEB. 13, 1960 : MAGHA 24, 1881 No. 3

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EXHIBITION OF INDIAN SCIENTIFIC AND TECHNICAL PUBLICATIONS

Prof. Humayun Kabir, Union Minister for Scientific Research & Cultural Affairs and Vice-President of the Council of Scientific & Industrial Research, declared open, on Feb. 7, 1960, the exhibition of Indian Scientific and Technical Publications organised by CSIR in the Science Pavilion of the World Agriculture Fair.

Prof. M. S. Thacker, Director-General, Scientific & Industrial Research, in requesting Prof. Humayun Kabir to declare the Exhibition open, observed that the object of the Exhibition is to portray the progress of scientific and technical publications in English and in the major Indian languages. The books and periodicals displayed in the Exhibition have been collected from various publishing agencies, universities, research institutions and learned societies in India. The lacunae in the collection of publications in Indian languages have been made up from the resources of the National Library, Calcutta.

The total number of publications on display is about 5,000, the actual number published in India during the past decade may be estimated at 10,000.

Prof. Thacker thanked Shri B. S. Kesavan and the staff of the National Library for their assistance in classifying the publications and compiling a bibliography.

Prof. Humayun Kabir, in declaring the Exhibition open, observed that scientific publications are important for spreading science and creating a 'climate' for science to flourish in the country. Of the 255 scientific periodicals displayed in the Exhibition, 231 are in English and only 24 are in the Indian languages. The publication of modern scientific literature in Indian languages was rather disappointing. Prof. Humayun Kabir announced that he would be prepared to institute an annual award of Rs. 10,000 to the best series of scientific books published in any Indian language in the course of a year.

Exhibition of Indian Scientific and Technical Publications—Prof. Humayun Kabir accompanied by Prof. M.S. Thacker examining some of the publications

MEETINGS

B.S.I.R., Governing Body & Society

Committee of the B.S.I.R.	March 21, 1960	CSIR Secretariat, New Delhi; 10.00 a.m.
B.S.I.R.	March 22, 1960	Ministry of External Affairs, Central Secretariat, New Delhi; 9.00 a.m.
Governing Body	March 23, 1960	Ministry of External Affairs, Central Secretariat, New Delhi; 9.00 a.m.
Society	March 23, 1960	Ministry of External Affairs, Central Secretariat, New Delhi; immediately after the Governing Body meeting

Executive Councils

CMRS, Dhanbad	Feb. 19, 1960	CMRS, Dhanbad; 11.00 a.m. Chairman : Shri A. Zaman
NCL, Poona	Feb. 20, 1960	NCL, Poona; 10.00 a.m. Chairman : Shri P.A. Narielwala
CBRI, Roorkee	Feb. 24, 1960	CSIR, Secretariat, New Delhi; 11.30 a.m. Chairman : Shri N. Dandekar
CFTRI, Mysore	Feb. 28, 1960	CFTRI, Mysore; 11.00 a.m. Chairman : Shri B.D. Jatti

Research Committees

Metals Research	Feb. 17, 1960	TISCO, Jamshedpur; 10.30 a.m. Chairman : Shri J.J. Ghandy
Civil Engineering and Hydraulic Research	Feb, 26, 1960	CSIR Secretariat, New Delhi; 11.30 a.m. Chairman : Shri Kanwar Sain

BRIEFS

Bibliography of Indian Scientific Publications

A Bibliography of Indian Scientific and Technical Publications displayed at the Exhibition organized by the CSIR at the Science Pavilion of W.A.F. has been published.

The Bibliography lists 4,801 publications out of which 2,908 are in Indian languages and the rest in English.

The Bibliography compiled by the National Library, Calcutta is divided into two parts—Part I, containing the entries in Indian languages and Part II, containing the entries in the English language.

In Part I, publications are arranged irrespective of language in one classified sequence, according to the Dewey Decimal classification. The entries are arranged in the numerical sequence of the decimal notation as the first line of arrangement, the sub-arrangement being alphabetically by author, under each decimal number. The alphabetical index lists in one sequence author, title, series, translator, joint author, editor, and cross-references. The language symbol is given at the end of the entry.

The entries for Indian language publications have been transliterated into Roman script with diacritical marks.

An author index to Parts I & II, a common consolidated subject index for both parts, consisting of specific subject headings with relevant decimal code numbers, and a list of publishers and their addresses are also included.

A statistical table provides details relating the distribution of books in the several languages and the number of books in each of the sub-sections of Pure Science and Technology.

Copies of the Publication (Pp. xii+198+195, Royal 8vo, price Rs. 25.00) are available from the Publications Directorate, CSIR, New Delhi.

Metallurgical Research & Industry

A 22-page brochure on the activities and achievements of the *National Metallurgical Laboratory*, Jamshedpur, has been published by the Council of Scientific & Industrial Research.

The brochure highlights the work leading to the development of processes for stainless steel, ferro-alloys and special refractories; the low-shaft furnace pilot plant for pig iron production; L.D. process of steel making; and beneficiation of low-grade ores.

Copies of the publication are available from the Director, National Metallurgical Laboratory, Jamshedpur.

Research Schemes Terminated

The following research schemes have been terminated with effect from Feb. 29, 1960.

1. *Varietal suitability for the preservation of important fruits and vegetables of West Bengal*—Dr. A.N. Bose, College of Engineering and Technology, Calcntta.

2. *Application of phase exchange method on the demineralization of Indian coals*—Dr. S. Bhagavantam, Director, Indian Institute of Science, Bangalore.

* * *

DR. P.K. BOSE, Head of the Department of Chemistry, Bose Institute, Calcutta will supervise the research scheme, *Microbial synthesis of proteins in relation to the biogenesis of nucleic acids* in the absence abroad of Dr. D.P. Burma, Investigator-in-charge of the scheme.

PERSONAL

●PROF. M.S. THACKER, Director-General, Scientific & Industrial Research, has been elected an Honorary Member of the *Indian Institute of Metals*, Calcutta.

* * *

●DR. A. SREENIVASAN, formerly Professor of Food Technology, Bombay University, took charge as Deputy Director, CFTRI, Mysore, with effect from Oct. 26, 1960.

* * *

●DR. V. SUBRAHMANYAN, Director, CFTRI, Mysore, has been nominated a CSIR representative on the *Inter-Ministerial Agricultural Production Board* set up by the Union Ministry of Food & Agriculture.

●LT. GEN. H. WILLIAMS, Director, CBRI, Roorkee, has been nominated a representative of CSIR on *Reunion Internationale des Laboratories d Essais et de Recherches sur les Materiaux et les Constructions* (RILEM).

●DR. S. HUSAIN ZAHEER, Director, RRL, Hyderabad, has been nominated a member of the Board of Directors of *Government Company* for the *Fertilizer Factory* set up by the Government of Andhra Pradesh.

●SHRI N.V. MODAK, Director, CPHERI, Nagpur, has been nominated a member of the *Health Panel* set up by the *Planning Commission* to formulate proposals for the Third Five-Year Plan.

●DR. M. SWAMINATHAN, Asst. Director, CFTRI, Mysore, has been nominated a CSIR representative on the Committee on *Health Survey and Promotion of Standard of the Nutrition Among School Children*, Union Ministry of Health.

●DR. L.A. RAMDAS, Asst. Director, NPL, New Delhi, has been nominated a CSIR representative on the *Inter-Ministerial Agricultural Production Board*, Union Ministry of Food & Agriculture.

●SHRI PREM PRAKASH, Asst. Director, NPL, New Delhi, has been nominated a member and convener of the Committee set up by the Ministry of Commerce & Industry to explore the possibility of increasing the *Production of Inspectors' Balance and Precision Balance in India*.

●The following CSIR officers have been nominated members on the Expert Committee constituted by the Uttar Pradesh Government for developing the Harcourt Butler Technological Institute, Kanpur as a Centre for Research in Technology and Industry.

DR. ATMA RAM, Director, CGCRI, Calcutta; DR. B. MUKERJI, Director, CDRI, Lucknow; DR. M.L. DHAR, Asst. Director, CDRI, Lucknow; and DR. G.R.K. MURTY, Senior Scientific Officer, CDRI, Lucknow.

RESEARCH IN PROGRESS

National Laboratories

NML, JAMSHEDPUR

Beneficiation of Limestone Rejects—Investigations were under way to up-grade the limestone rejects from the Government Cement Factory, Churk (U.P.). The rejects assayed: CaO, 34.45; CO_2, 30.31; MgO, 2.94; SiO_2, 21.09; Al_2O_3, 6.0; and Fe_2O_3, 1.4 per cent. The principal gangue was shale and quartz. Optimum conditions for the flotation of rejects have been worked out using oleic acid as collector and sodium silicate as depressant. Concentrates containing 45-47 per cent CaO with percentage recovery of 80-88 have been obtained. The concentrates are suitable for cement manufacture.

CSRI, BHAVNAGAR

Estimation of Calcium—The routine estimation of calcium in saline mixtures by titration with E.D.T.A. presents some difficulty, as the end point is not sharp. It has been found that addition of a few drops of 0.1 per cent thymol blue or thymolphthalein solution makes the end point very sharp and enables the accurate determination of calcium.

RRL, HYDERABAD

Up-grading of Palmarosa Oils—Various methods of beneficiation of palmarosa oil for getting oil of perfumery grade (high in geraniol content) have been examined. It has been shown that hydrotropic extraction with sodium salicylate solution (5-7.5 vol. of 45-50 per cent solution) and sodium toluene sulphonate solution (5-7.5 vol. of 45-50 per cent solution) yields oil containing 90-96 per cent geraniol.

Sponsored Research

Biosynthesis of Ascorbic Acid—*In vitro* biosynthesis of ascorbic acid by the enzymes present in microsome fractions of liver tissues has been previously reported. This technique has been employed in the study of ascorbic acid synthesis in liver tissues of animals deficient in vitamins of the B-group.

Microsome preparations from livers of deficient as well as normal rats were employed in these experiments. It was observed that in the nutritional deficiency of thiamine, riboflavin, pyridoxine or pantothenic acid and also in the aminopterin induced folic acid deficiency, the ability of rat liver microsomes or extracts to synthesise ascorbic acid is greatly impaired. Addition, *in vitro*, of the respective vitamins or their co-enzyme forms to the test system containing the deficient enzymes has no effect in enhancing the synthesis to the normal level. To find out whether the impairment of synthesis was due to derangement of microsomal enzymes, microsomes, from deficient animals were mixed up with supernatents from the controls, and *vice versa*, and the rate of synthesis of ascorbic acid was determined; in no case was any increase in the rate of synthesis of ascorbic acid observed. *In vitro* addition of different anti-vitamins, such as oxythiamine, pyrithiamine, desoxy pyridoxine, pantoyltaurine, and aminopterin, to the test system containing normal rat liver microsomes does not inhibit the synthesis.

These studies definitely prove that it is the microsomal apoenzymes which are deranged under deficiency of any of the vitamins so far studied. The deficient enzymes can be restored to the state of normalcy only by maintaining the normal condition of tissues *in vivo*. The derangement is apparently greater in riboflavin and folic acid deficiency than in thiamin deficiency—B. C. GUHA, R. N. RAY, N. C. KAR & S. K. DAS, Calcutta University, Calcutta.

Radioactive P^{32} in Carrier-free State—A simple method for the isolation and concentration of unweighable amounts of radioactive P^{32} from aqueous solutions has been developed. The method has been extended to its preparation from neutron irradiated carbon disulphide and for its separation from mixtures containing relatively large proportions of Cu, Cd, Zn and ferric ions. The recovery is about 95 per cent and the degree of concentration reached so far is 20 times.

The method consists of the following steps : (i) adsorption of radioactive phosphate ions on ignited and pretreated barium sulphate under optimum *p*H conditions; (ii) desorption of adsorbed activity in minimum amount of 1 N HCl; and (iii) removal of traces of barium ions, and other cationic impurities, if any, by keeping the radioactive concentrate in contact with about 1 g. of a pre-treated sample of Amberlite, I.R. 120-cation exchange resin.

The time taken for concentrating 1 litre of aqueous solution to 5 ml. is about 3 hr. and the resulting solution is suitable for biological as well as radiochemical purposes—K.R. KAR, Delhi University, Delhi.

Research Papers

A STUDY OF THE COMPARATIVE EFFECTIVENESS OF DIFFERENT ALCOHOLS AS FROTHING AGENTS IN COAL FLOTATION — A. Banerjee, A. K. Chakravarti, G. G. Sarkar & A. Lahiri, CFRI, Jealgora. *J. Mines, Metals & Fuels*, **6** (1959), 7, 1-5.

MINERAL MATTER OF S. ARCOT LIGNITE—Pt. II : ASSESSMENT OF 'TRUE ASH' AND MINERAL MATTER—S. K. Majumdar & N.C. Banerjee, CFRI, Jealgora. *Brennstoff-Chemie*, **40** (1959), 261-63.

FUNDAMENTAL STUDIES ON COAL FLOTATION : RELATION BETWEEN CONTACT ANGLE, ACTIVE OXYGEN CONTACT AND NATURAL FLOTATION—Ashim Banerjee, K. A. Kini, G. G. Sarkar & A. Lahiri, CFRI, Jealgora. *J. appl. Chem.*, **22** (1959), 169-70.

MASS HANDLING OF MATERIALS—S.K. Majumdar & A. Lahiri, CFRI, Jealgora. *J. Mines, Metals & Fuels*, **7** (1959), 10, 1-7.

AN INVESTIGATION ON THE MAGNETIC PROPERTIES OF SOME PERMANENT MAGNET MATERIALS—E.G. Ramachandran & Ved Prakash, NML, Jamshedpur. *Trans. Indian Inst. Metals*, **12** (1959), 333-48.

THE ELECTRICAL AND MAGNETIC PROPERTIES OF SOME LOW MANGANESE LOW ALUMINIUM STEELS—E. G. Ramachandran & Ved Prakash, NML, Jamshedpur. *Trans. Indian Inst. Metals*, **12** (1959), 349-58.

THE STRUCTURE OF SULPHIDE LAYERS ON COPPER—Y. N. Trehan, NML, Jamshedpur. *Trans. Indian Inst. Metals*, **12** (1959), 387-95.

PATENTS & PROCESSES

Applications Filed

70172 : *An improved process for or relating to manufacture of lower vinyl esters in general and vinyl acetate in particular*— S. Ramanujam, R.K. Bhatnagar & N.R. Kuloor, Shri Ram Institute for Industrial Research, Delhi.

70174 : *An improved process for or relating to the production of dimeric linoleic acid from castor oil fatty acids*—Satish Chander & R.K. Bhatnagar, Shri Ram Institute for Industrial Research, Delhi.

70175 : *New method for the preparation of some 1, 2, 3, 4-tetrahydroquinolines and the preparation of a new series of organic compounds, viz. 1(2-dialkylaminoalkyl) 1, 2, 3, 4-tetrahydroquinolines therefrom*—G. Thyagarajan, G.S. Sidhu & S.H. Zaheer, RRL, Hyderabad.

70318 : *Developments in/or relating to the production of oils and fats having materials for detecting their adulteration*—B.S. Joshi, NCL, Poona.

70319 : *Improvements in or relating to the process of preparing n-methyl taurine*—G.P. Thakar & B.C. Subba Rao, NCL, Poona.

Applications Accepted

INDIA

64959 : *A process for the preparation of dihydrojasmone*—J.H. Amin & S.C. Bhattacharyya, NCL, Poona.

65556 : *A process for electrolytic production of carbon-free iron-chromium alloys from chromite ore*—P.B. Chakravarti & T. Banerjee, NML, Jamshedpur.

66294 : *Improvements in or relating to electrode holders for manual arc welding*—G.S. Chowdhury, G.C. Gopi Reddy, M.K. Chary & S.H. Zaheer, RRL, Hyderabad.

FRANCE

1208393 : *New stainless steels and methods of preparing them*—B. R. Nijhawan, P.K. Gupte, S. S. Bhatnagar & B. K. Guha, NML, Jamshedpur.

Process Ready for Exploitation

CHEMICALLY BONDED REFRACTORIES

The *National Metallurgical Laboratory*, Jamshedpur, has developed a process (Indian Pat. No. 65610) for the manufacture of chemically bonded metal clad or unclad basic refractories utilizing indigenously available raw materials (magnesite, chromite and magnesium chloride). The process can also be used for the manufacture of ramming and castable mixes used for monolithic lining. These refractories find extensive use in iron and steel industry as substitutes for prefired basic refractories; at present these are not manufactured in India.

The process is simple and does not involve the use of special equipment other than that normally used for the manufacture of basic refractories.

The total capital outlay for a plant capable of producing 15,000 tons of refractories annually is estimated at Rs. 28 lakhs.

Parties desirous of taking up the commercial development of the process may correspond with the Secretary, National Research Development Corporation, Mandi House, New Delhi-1.

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ADVERTISEMENTS

No. 9/60 : CSIR Research Fellowships

Applications are invited for Senior and Junior Research Fellowships tenable in the national laboratories and research laboratories attached to universities, colleges and other recognized institutions in the country.

Senior Research Fellowships : Rs. 400 per mensem fixed and Rs. 500 in the case of certain fields of engineering only ; available for 2 years with possible extension to a third year.

Qualifications : Post-graduate research experience and preferably Ph.D. degree in science ; age not more than 30 years on 1-4-1960 but for exceptional cases.

Junior Research Fellowships : Rs. 250 per mensem fixed and Rs. 300 in the case of certain fields of engineering only ; available for 2 years with possible extension to a third year.

Qualifications : M.Sc. in science or Bachelor's degree in technology or engineering or equivalent qualifications, preferably first class ; age not more than 25 years on 1-4-1960 but for exceptional cases.

Six copies of application forms and terms and conditions of the Fellowships are obtainable on payment of Re. 1 only (in the form of a Crossed Indian Postal Order) payable to the Secretary, Council of Scientific & Industrial Research.

Completed applications, accompanied by a fee of Rs. 6.50 (Re. 0.87 for scheduled castes and tribes) in the form of a Crossed Indian Postal Order should reach the Secretary, Council of Scientific & Industrial Research, Old Mill Road, New Delhi, not later than **Feb. 29,** 1960.

No. 10/60 : Burmah-Shell and Assam Oil Company Scholarships

Applications are invited for the above Scholarships tenable in Commonwealth countries for a period of two years each. The awards will be made to the best qualified candidates for higher training in any of the following subjects.

1. Petroleum Engineering
2. Mining Engineering
3. Chemical Engineering
4. Fuel Technology
5. Geology and Geophysics
6. Metallurgy & Foundry Practice

Qualifications : The minimum qualification required is a first class M.Sc. degree in science or a first class degree in engineering or technology in a field related to the subject of training. Applicants should ordinarily be between 20 and 30 years of age.

Further particulars and application forms may be obtained from the Secretary, Council of Scientific & Industrial Research, Old Mill Road, New Delhi. Application forms duly completed together with an application fee of Rs. 7.50 (Rs. 1.87 for scheduled castes/tribes) in the form of a Crossed Indian Postal Order in favour of the Secretary, CSIR, should reach him not later than **Feb. 29, 1960.**

Printed at Asia Press, Delhi-7 and Published by the Council of Scientific & Industrial Research, Old Mill Road, New Delhi-1.

R.N. 4212/57

CSIR NEWS

VOL. 10 NEW DELHI—FEB. 27, 1960 : PHALGUNA 8, 1881 No. 4

CENTRAL FOOD TECHNOLOGICAL RESEARCH INSTITUTE MYSORE LIBRARY 17-3-60

Training Course in Electroplating

A three-month course on Electroplating will commence at the *Central Electro-chemical Research Institute*, Karaikudi in the third week of March 1960. The course will consist of lectures and practical training.

Persons who wish to undergo the course should be sponsored by industry or organizations engaged in electroplating and should be graduates with chemistry as one of the subject. Further details and prescribed application form can be had from the Director, Central Electro-chemical Research Institute, Karaikudi.

CFRI Foundation Lecture

Dr. J. W. Whitaker, Director, CMRS, Dhanbad, will deliver the Tenth Foundation Day Lecture of the *Central Fuel Research Institute*, Jealgora on March 7, 1960. The subject of the lecture will be *Education, Science and Research.*

Prof. M.S. Thacker

The degree of Doctor of Science *honoris causa* has been conferred on Prof. M.S. Thacker by the Banaras Hindu University at the convocation held on Feb. 17, 1960 at Varanasi. The citation read out on the occasion refers to Prof. Thacker's distinguished services as "engineer and a renowned scientist who has a brilliant record of service to the cause of science and technology in India".

The Mechanical Engineers' Association (India) awarded a *Gold Medal* to Prof. M.S. Thacker in recognition of his services to the cause of science and technology on the occasion of its annual conference at Hyderabad. Prof. Thacker was nominated the first honorary member of the Association.

Dr. A. Lahiri, Director, CFRI, Jealgora and Dr. V. Subrahamanyan, Director, CFTRI, Mysore have been awarded *Padma Shri* by the President of India on Republic Day (Jan. 26, 1960).

PERSONAL

●Shri I.N. Mathur took charge as Administrative Officer : Grade I, CMERI, Durgapur, with effect from Jan. 15, 1960, on transfer from NPL, New Delhi.

●Shri K.D. Banerjee took charge as Administrative Officer : Grade I, NML, Jamshedpur with effect from Jan. 27, 1960 on transfer from the CMERI, Durgapur *vice* Shri Naseeruddin Ahmed, transferred to CDRI, Lucknow.

●Shri V.B. Nileswar has been appointed Senior Scientific Officer : Grade I, NML, Jamshedpur with effect from Feb. 2, 1960.

* * *

●Shri S.K. Sen Gupta, Senior Scientific Officer, CFRI, Jealgora, left for U.K. in December 1959 for 6 months' training in *Operation of electron microscope and mass spectrometer* at the Metropolitan & Vickers Ltd.

●Shri B. L. Sen, Senior Scientific Officer, NML, Jamshedpur, who had been to West Germany for training in *Operation and maintenance of low-shaft furnace* returned to India and resumed duty with effect from Dec. 23, 1959.

●Dr. M. C. Khosla, Senior Scientific Officer, CDRI, Lucknow, who had been on deputation to Switzerland returned to India and resumed duties. Dr. Khosla worked at the University of Zurich on *Synthesis of carotenoids.*

●Shri A. K. Lahiri, Junior Scientific Officer, NML, Jamshedpur, returned from U.K. and resumed duty with effect from Jan. 18, 1960.

* * *

●Dr. A. Lahiri, Director, CFRI, Jealgora has been elected a Fellow of the *National Institute of Sciences*, India.

●Dr. B. Mukerji, Director, CDRI, Lucknow has been elected General President of the *Indian Science Congress* for the year 1961-62.

●Dr. Y. Nayudamma, Director, CLRI, Madras, has been nominated a CSIR representative on the Development Council for *Leather, Leather Goods* and *Pickers Industries,* Union Ministry of Commerce & Industry.

●Dr. M. L. Dhar, Asst. Director, CDRI, Lucknow, has been elected a Fellow of the *National Institute of Sciences*, India.

●Dr. A.B. Biswas, Asst. Director, NCL, Poona, has been nominated a member of the Chemistry Advisory Committee, Department of Atomic Energy up to Jan. 16, 1961.

●The following officers have been nominated members of the Committee/Panel of the *Indian Standards Institution* :

Dr. M. Srinivasan, Asst. Director (Principal Member) and Dr. L.V.L. Sastry, Junior Scientific Officer (Alternate Member), CFTRI, Mysore—*Apiary Industry Sectional Committee.*

Dr. M. Swaminathan, Asst. Director (Principal Member) and Dr. M. Srinivasan, Asst. Director (Alternate Member), CFTRI, Mysore—*Dairy Industry Sectional Committee.*

Shri M.A. Ghani, Senior Scientific Officer (Principal Member), and Shri G.S. Rama Iyer, Senior Scientific Assistant (Alternate Member), CLRI, Madras—*Adhesives for Leather Industry Sub-Committee* and *Terminology Sub-Committee.*

Dr. T. Banerjee, Deputy Director, NML, Jamshedpur (Member and Convener)—*Anodes for Electroplating Sub-Committee.*

●Shri S. K. Chatterji, Junior Scientific Officer, CDRI, Lucknow, has been awarded the Ph.D. degree by the Lucknow University for his thesis, *Chemical Investigation of Indian Medicinal Plants and Studies in Antimetabolites.*

BRIEFS

Coal Carbonization

The proceedings of the symposium on Coal Carbonization held at the *Central Fuel Research Institute*, Jealgora in March 1957 have been published as a special issue of the *Journal of Mines, Metals & Fuels*, Calcutta.

The 378-page publication includes 65 papers presented and discussed at the symposium covering the following aspects: Fundamentals of coal carbonization and mechanism of coke formation; preparation and properties of coals for carbonization; analysis and testing of coke; low and high temperature carbonization and production of coke for various purposes; recent developments in coke oven design and practice; by-product recovery and refining, including coke oven gas; and economics of carbonization and planning.

Copies of the publication (price, Rs. 20) are available from the Director, Central Fuel Research Institute, Jealgora.

Pilot Plants in Metallurgical Research

The four-day symposium on Pilot Plants in Metallurgical Research and Development, organized by the *National Metallurgical Laboratory*, Jamshedpur ended on Feb. 18, 1960. Prof. M. S. Thacker, Director-General, Scientific & Industrial Research inaugurated the symposium. The Opening Address was delivered by Shri J. J. Ghandy, Chairman, Executive Council, NML, Jamshedpur.

Twenty-seven papers contributed by scientists and metallurgists from India and abroad (U. S. A., U. K., France, Australia, W. Germany and Japan) were presented and discussed in six technical sessions. The papers related to: Uses and limitation of pilot plants in iron and steel industry; pilot plants in pyrometallurgy; L. D. and side-blown convertor; steel melting in pilot shaft-furnace; pilot plant production of manganese and manganese dioxide; pilot plants for sintering iron ores, production of sintered beryllium oxide, agglomeration of iron ores and recovery of vanadium pentoxide from titaniferrous magnetites; pilot plants for aluminising of steel and continuous casting of steel; pilot plant production of metallurgical refractories and metallurgical coke; and coal washing pilot plants.

Three special lectures on the following subjects were delivered by foreign delegates: Metallurgical research in U. S. Steel Corporation by Dr. James B. Austin (U.S.A.); Sintering in iron making by Dr. E. W. Voice (U.K.); and Intensification of open hearth process by compressed air by Dr. Sirkov (U.S.S.R.)

High Polymers

A symposium on High Polymers was held at the Indian Association for the Cultivation of Science, Calcutta on Jan. 30—31, 1960 under the auspices of the Chemical Research Committee, CSIR. Prof. S.N. Bose, F.R.S. inaugurated the symposium and Prof. B.C. Guha, Chairman, Chemical Research Committee, CSIR, presided over the main session.

Fifty-two papers were presented and discussed in 5 sessions on (1) Fundamental studies on high polymers; (2) Industrial plastics; (3) Elastomers and fibres; (4) High polymers in paint industry and (5) Ion-exchange and its application. Prof. N. R. Kamath, Dr. C. E. Salkeld, Prof. A.C. Chatterjee, Dr. S.L. Bafna, Dr. Satya Prakash, Dr. G.S. Misra and Dr. P.K. Chowdhury presided over the technical sessions.

The following four lectures were also delivered during the symposium: (1) Hydro-dynamics of high polymer solution by Dr. Sadhan Basu; (2) the Electro-chemistry of extended structures by Prof. R.P. Mitra; (3) Current problems in rubber industry by Dr. D. Banerjee; and (4) Phenol formaldehyde condensation reaction by Prof. L.M. Yeddanapalli.

Concurrently with the symposium an exhibition of plastics, rubbers and synthetic fibres was also held.

Solid State Physics

A symposium on Solid State Physics and a conference of the Physical Research Committee were held at the Indian Institute of Science, Bangalore on Feb. 1—3, 1960. Dr. S. Bhagavantam, Director, Indian Institute of Science, Bangalore inaugurated the symposium.

One hundred and six papers were presented and discussed in eleven sessions bearing on (1) Spectroscopy, (2) Neutron scattering and structure of solid state, (3) Defects in solids, (4) Plasticity and ultrasonics, (5) Magnetic resonance, (6) Magnetism, (7) Optical properties of solids, (8) X-ray crystallography, (9) Structure by X-ray methods, (10) Computers, ionizing radiations, etc. and (11) Geophysics and other topics. The sessions were presided over by Drs. S. Bhagavantam, R.K. Asundi, G.N. Ramachandran, K.R. Ramanathan, B.D. Nag Chaudhuri, N.L. Singh, A.K. Saha, R.S. Krishnan, R. Ramanna, M.G.K. Menon and M.W. Chiplonkar respectively.

Dr. K.R. Ramanathan, Director, Physical Research Laboratory, Ahmedabad addressed the gathering on Geomagnetism and the Upper Atmosphere on the opening day of the symposium.

Training Course in Batteries

The eight-week course of technical training in *Batteries* instituted by the *Central Electrochemical Research Institute*, Karaikudi was inaugurated by Dr. K.L. Ramaswami, Superintendent (Production), Sindri Fertilizers Private Ltd., Sindri on Feb. 11, 1960. Prof. M.S. Thacker, Director-General, Scientific & Industrial Research, presided over the inaugural function.

* * *

The Regional Research Laboratory, Hyderabad which participated in the All-India Industrial Exhibition held at Hyderabad (Jan. 1—10, 1960), has been awarded a Special Prize for its presentation of exhibits.

Research Fellowships

The following have been awarded *CSIR Fellowships* for research on projects noted against their names:

Senior Fellowships:

1. Shri Sukumar Das—*Studies on biosynthesis of fats* (University College of Science & Technology, Calcutta).
2. Shri P.K. Chatterji—*Mechanism of vulcanization of rubber* (Indian Association for the Cultivation of Science, Calcutta).
3. Shri S.K. Balasubramanian—*Essential Oils Research Centre: Conversion of abietic acid into a physiologically active steroid molecules* (Indian Institute of Science, Bangalore).

Junior Fellowships:

1. Shri Balaram Das—*Studies on biosynthesis of fats* (University College of Science & Technology, Calcutta).

(*Contd. on p. 3, col. 3*)

RESEARCH IN PROGRESS

National Laboratories

NML, JAMSHEDPUR

Determination of Gases in Metals and Alloys—The vacuum fusion apparatus designed and fabricated at the Laboratory (*CSIR News*, Vol. 9, No. 12, p. 1) has been successfully employed for the determination of oxygen, hydrogen and nitrogen in a wide range of metals and alloys, such as copper, electrolytic manganese, coinage alloys, low alloy steel, nickel-free stainless steel, chromium manganese-iron alloys, and welded steel.

CFRI, JEALGORA

Energy Requirements of Indian Industries—A statistical study of energy requirements of major Indian manufacturing industries has been undertaken. The study is based on (i) assessment of energy consumption per unit of production for different industries and (ii) trend analysis by correlating the total energy requirements by industries with some economic factor, e g. index of industrial production.

The total energy requirement by the end of the Second Five-Year Plan has been estimated at about 28 million tons of coal equivalent. The percentage of fuel energy contributed by coal, oil and electricity (mostly coal based) has been found to be 75, 1.1 and 6.0 per cent respectively.

A structural equation has been developed connecting energy consumption and index of industrial production. Given the targets of production for industries the method is useful for assessing the energy and power required in future Five-Year Plans—A. Lahiri, A. Ghosal & H.C. Sinha.

CDRI, LUCKNOW

Cardiovascular Drugs—Ruvoside, an isomer of peruoside (a glycoside isolated from *Thevetia nerifolia* Kaner under a CSIR sponsored research scheme at Andhra University, Waltair) has been found to be more cardioactive than most of the known glycosides of *Digitalis* group.

Sponsored Research

Oxalic Acid Metabolism in Plants—Enzyme systems responsible for the formation of oxalic acid in plants utilizing 2-C compound glyoxylic acid have been studied. Homogenates of plants, such as *Portulaca, Cactus, Oxalis, Colocasia and Alocasia*, known to contain oxalates, when tested for glyoxylic acid oxidation by the Warburg manometric technique and Thunberg system showed that none of them utilizes glyoxylates as substrate for oxalate formation.

Studies on glyoxylate dehydrogenation in the Thunberg system with cysteine as activator revealed that cysteine itself was oxidised. The mechanism of oxidation of cysteine was investigated in detail. *Cactus* and *Portulaca* homogenates brought about the dehydrogenation of cysteine partly through enzymes, coenzyme and some other dialysible cofactor—P.S. Krishnan & S. K. Shrivastava, Lucknow University, Lucknow.

Biosynthesis of Cholesterol—The effect and nature of ingested fats on the *in vitro* synthesis of cholesterol by liver slices has been reported earlier (*CSIR News*, Vol. 9, No. 14, p. 3)

In vitro experiments on the incorporation of 1-C^{14}-acetate in liver cholesterol with liver slices of rats maintained on different dietary lipids showed that there is a marked depression in the radio-acetate incorporation into choletserol in case of essential fatty acids-deficient animals ; inclusion of fat in diet stimulates cholesterol biosynthesis.

A preliminary fractionation study with liver homogenates of both normal (fat-fed) and fat-deficient rats show that both soluble-fractions and microsomes are required for the synthesis of cholesterol from radioactive acetate—S. Mukherjee & (Miss) Sudha Gupta, University College of Science & Technology, Calcutta.

Research Papers

Beneficiation and processing of some important raw materials for iron and steel production—G. P. Mathur & P.I.A. Narayanan, NML, Jamshedpur. *Indian Constr. News*, **8** (1959), 136-42.

Refining of Indian pig irons in an experimental L-D oxygen converter : Part I—B.L. Sen, B. R. Nijhawan & A.B. Chatterjee, NML, Jamshedpur. *Indian Constr. News*, **8** (1959), 192--99.

Refining of Indian pig irons in an experimental L-D oxygen converter : Part II—B.L. Sen, NML, Jamshedpur. *Indian Constr. News*, **8** (1959), 200-10.

Thermal beneficiation of low-grade chrome ores : Part III—Gaseous reduction—R. N. Misra, M. C. Sen & P. P. Bhatnagar, NML, Jamshedpur. *Trans. Indian Inst. Metals*, **12** (1959), 221-34.

(*Contd. from p. 2, col. 3*)

2. Shri K.P. Chowdhury—*Chemical and pharmacological investigation of* Ervatamia coronaria *Staph and other species belonging to the same genus* (Banaras Hindu University, Banaras).

Research Schemes Terminated

The following research schemes have been terminated with effect from Feb. 29, 1960.

1. *Preparation of β, β—dichlorodiethyl ether*—Dr. N. R. Kuloor, Shri Ram Institute for Industrial Research, Delhi.
2. *Synthetic investigation on carcinogens and anticarcinogens*—Dr. K.S. Narang, Panjab University, Hoshiarpur.
3. *A unit for testing cancer producing and cancer inhibiting substances*—Dr. V.R. Khanolkar, Indian Cancer Research Centre, Bombay.
4. *A systematic chemical analysis and examination of the fat, protein and vitamin content of fresh water fish* Labeo rohita—Dr. R. D. Tiwari, Allahabad University, Allahabad.
5. *Role of action of tetracycline antibiotics in micro-organisms and animals*—University of Bombay, Bombay.
6. *Design and construction of an analogue computer for the summation of double fourier series for X-ray crystal structure analysis*—Prof. R.S. Krishnan, Indian Institute of Science, Bangalore.
7. *Electronic levels and spectra of complex molecules*—Dr. M.R. Padhye, Indian Institute of Technology, Bombay.
8. *Vinyl chloride resins from alcohol and chlorine*–Shri R.K. Bhatnagar, Shri Ram Institute for Industrial Research, Delhi.
9. *Development of furfural alcohol and its condensation products*—Shri R.T. Thampy, Shri Ram Institute for Industrial Research, Delhi.

In Parliament

Unesco Assistance for CMERI, Durgapur—Prof. Humayun Kabir, Union Minister for Scientific Research & Cultural Affairs in reply to a question by Sarvashri Ram Sahai and S. Panigrahi informed the Rajya Sabha that a sum of $ 691, 400 from the United Nations Special Fund would be made available during a period of four years (from 1960 onwards) for the Central Mechanical Engineering Research Institute, Durgapur. This sum would be utilized for the purchase of scientific apparatus and equipment, machinery and tools, for award of Fellowships for training abroad and services of foreign experts.

Prof. Kabir said that the assistance was being given on the understanding that a major portion of the cost of the project would be borne by the Indian Government in the form of construction of buildings, personnel, equipment and other expenses (Feb. 9, 1960).

Preparation of Idli—Prof. Humayun Kabir outlined in Rajya Sabha the method developed by the Central Food Technological Research Institute, Mysore of preparing *Idli* from 'Composite Idli Flour' and 'Instant Idli Flour'. *Idli* can be prepared from the Composite Flour by allowing it to ferment for 10-12 hr. and from the Instant Flour by soaking it in water for 10 minutes. The Minister was replying to a question by Shri Nawab Singh Chauhan.

Prof. Kabir stated that some firms were already manufacturing and marketing these flours (Feb. 9, 1960).

PATENTS & PROCESSES

Application Filed

70555 : *Air separator*—Y.K.R. Rao, CFTRI, Mysore.

Applications Accepted

INDIA

66096 : *A process for the production of bacterial diastase*—I. Babbar, R.M. Behki & M.C. Srinivasan, NCL, Poona.

66109 : *Improvements in or relating to the production of magnesium metal by the electrolysis of anhydrous magnesium chloride*—V. Aravamuthan & K. Venugopalan, CECRI, Karaikudi.

U.K.

12323/58 : *New stainless steels and methods of preparing them*—B.R. Nijhawan, P.K. Gupte, S.S. Bhatnagar & B.K. Guha, NML, Jamshedpur.

CUBA

149082 : *Manufacture of nicotine sulphate from tobacco or tobacco wastes*—J. Gedeon & M. Goswami, NCL, Poona.

Applications Sealed

61771 : *An improved process for the conversion of high sulphur coals into ion exchanger for water softening and the like*—M.S. Iyengar, S. Guha, M.L. Beri & A. Lahiri, CFRI, Jealgora.

62490 : *A process for creating deformations in the cable ducts in prestressed concrete structures*—S.K. Narayana & S.M. Krishnaiah Chetty, CBRI, Roorkee.

62890 : *A new process for the production of 4-hydroxycoumarin and its derivatives*—V.R. Shah, J.L. Bose & R.C. Shah, NCL, Poona.

62938 : *A process to produce dense carbon aggregates from carbonaceous materials of varied volatile contents*—H.P. Srinivasamurthy & P. Prabhakaram, NML, Jamshedpur.

Processes Ready for Exploitation

PORCELAIN INSULATOR FOR SPARK PLUGS

The *Central Glass & Ceramics Research Institute*, Calcutta has worked out the 'know-how' for the production of porcelain insulators for 14 mm. automobile spark plugs using indigenous raw materials. The spark plugs made from these insulators conform to the Indian standard specification and are comparable in performance to imported plugs.

The process of manufacture is similar to that of high tension insulators. The plant and machinery required is similar to that employed in other ceramic industries.

Parties interested in undertaking the commercial development of the process may correspond with the Secretary, National Research Development Corporation, Mandi House, New Delhi.

LIQUID GOLD

The *National Metallurgical Laboratory*, Jamshedpur, has developed a simple and economic process for the manufacture of liquid gold comparable in quality and performance to imported material. The product has been tested and found to be satisfactory by a few private firms.

The product possesses the requisite consistency, flow and drying properties and can be stored in bottles without impairment for a long time. The process does not involve the use of special equipment.

Parties desirous of undertaking the commercial development of the process may correspond with the Secretary, National Research Development Corporation, Mandi House, New Delhi.

NATIONAL METALLURGICAL LABORATORY, JAMSHEDPUR

SYMPOSIUM ON IRON AND STEEL INDUSTRY IN INDIA

Proceedings of the symposium held at the National Metallurgical Laboratory during Feb. 4—7, 1959. Containing 47 papers on Iron and Steel Technology.

Pp. 516 ; Demy 4 to

Price : Rs. 15

For copies write to :

The Director, National Metallurgical Laboratory, Jamshedpur.

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CSIR NEWS

VOL. 10 NEW DELHI—MARCH 12, 1960 : PHALGUNA 22, 1881 No. 5

Building Research : Conference of Research Workers

A conference of building research workers and representatives of the building industry in India will be held at the *Central Building Research Institute*, Roorkee from April 11 to 13, 1960. Problems connected with Building Materials will be discussed under the following sections.

1. *Raw Materials & Products* : Cement and cementitious products ; stones and aggregates ; structural clay products; mineral raw materials, fibre boards ; new materials, such as silicones and plasters ; building paints ; and alternative building materials.
2. *Special techniques, Standardisation & Testing* : D.T.A., X-ray, and analytical techniques.
3. *Manufacturing Problems* : Economic aspects; utilisation of research results; and operational research.
4. *Special Problems* : Dampness ; corrosion ; effloresence ; firing of bricks ; kilns & furnacing ; and heat & sound insulation.

Further information regarding the Conference may be had from the Assistant Director (Information), Central Building Research Institute, Roorkee.

WAF Trophy for CSIR 'Science Pavilion'

The 'Science Pavilion' organized by the Council of Scientific & Industrial Research in the World Agriculture Fair has been awarded a trophy.

Dr. S. Radhakrishnan, Vice-President of India, awarded the trophy at a function held at the Exhibition Grounds on Feb. 29, 1960. This function was presided over by the Prime Minister of India. Shri P.M. Sundaram, Secretary, CSIR, received the trophy on behalf of the Council.

Dr. Atma Ram

Dr. Atma Ram, Director, CGCRI, Calcutta has deen awarded a *Gold Medal*, carrying also a cash prize of Rs. 1,000 by the Scientific Research Committee of Uttar Pradesh in recognition of his outstanding contributions to applied sciences, particularly in the field of silicate technology. Dr. Atma Ram is the first recipient of this award which is given for the best contribution in any field of sciences and technology in India.

PERSONAL

- SHRI LALIT MOHAN, Deputy Secretary, CSIR Secretariat, New Delhi, has been transferred as Administrative Officer, [redacted], NCL, Poona. He took charge with effect from March 1, 1960.
- SHRI R. P. PATHAK has been appointed, on promotion, Deputy Secretary, CSIR Secretariat, New Delhi, with effect from February 18, 1960.
- SHRI B.S. SINHA, Administrative Officer, CDRI, Lucknow, on transfer, joined the duty as Under Secretary, CSIR Secretariat, New Delhi, with effect from February 26, 1960.

(*Contd. on p. 4, col. 1*)

World Agriculture Fair—Shri P. M. Sundaram, Secretary, CSIR, receiving the WAF trophy awarded to CSIR

BRIEFS

Climatological & Solar Data

Climatological and solar data required for the designing of buildings with maximum thermal comfort have been compiled by Sarvashri T. N. Seshadri, K. R. Rao, M. R. Sharma, G. N. Sarma & Sharafat Ali of the Central Building Research Institute, Roorkee, and published. The publication will be found useful to architects, planners, air-conditioning engineers and others connected with the design of thermally comfortable houses, as also to a much wider circle of readers.

The 164-page publication is divided into three sections (A, B & C). Section A gives the climatic normals of temperature, humidity, rainfall, sky clearance and wind data for important towns in India. Isograms of maximum and minimum effective temperatures (indices of physiological comfort) for each month in a year are given in 12 different maps of India. Climatic zones are indicated in the maps, one for each major season of the year. Comfort values for different towns in each season are also tabulated.

Solar charts for different latitudes covering the country and tables of solar azimuths and altitudes are presented in Section B. A shadow-protractor is also included. The use of this in conjuction with solar charts gives the shadow angles for use in the design of louvers.

In Section C of the publication, charts pertaining to daily totals of direct solar radiation incident on roofs and differently facing walls are included. Tables of daily mean insolation as well as durations from the sun shine hours on roofs and different walls are also given. The data are useful for the calculation of total insolation falling on a building during any period and helps in finding solutions for problems relating to proper orientation and thermal insulation in general building design.

Copies of the publication (Price Rs. 10) are available from the Director, Central Building Research Institute, Roorkee.

Minor Batch Constituents in Glass Melting

A symposium on Minor Batch Constituents in Glass Melting was held at the *Central Glass & Ceramic Research Institute,* Calcutta on Feb. 4-5, 1960. About 500 delegates including scientists, technologists and representatives from various government departments attended the symposium. The symposium was inaugurated by Lala Shri Ram, Chairman of the Executive Council of the Institute and was presided over by Shri D.N. Sen, Founder President, All India Glass Manufacturer's Federation. Mr. F.G. West-Oram, Vice President, Society of Glass Technology, U.K. and Dr. S.R. Lela, President, Indian Section of the Society of Glass Technology, U.K. presided over the two other technical sessions.

Sixteen papers were presented and discussed in three sessions. The papers related to: Structure of bubbles in glass; influence of minor components of batch on the melting of glass and refining process; polarographic estimation of minor constituents in glass; sulphates in soda-lime-silica glass; container type glasses; copper red glass; selenium and cadmium sulphate coloured glasses; decolorisation of glass with selenium; fining agents in glass melting; and effect of impurities on the physiological properties of silica.

Dr. Atma Ram, Director of the Institute, in his introductory speech outlined the role of minor batch constituents in glass melting, with particular reference to fining, colouring and decolorising of glass. He emphasised the need for rigid control over the minor constituents in glass melting, not only to obtain good quality glass but also to achieve economy in production.

National Aeronautical Laboratory

The Offices of the National Aeronautical Laboratory have been shifted from New Delhi to *Bangalore* with effect from March 1, 1960. The new address is: *Director's Office*: 2/1, Palace, Road, Bangalore-1; and *Administrative Office*: Jayamahal Road, Bangalore-1.

Research Fellowships

The following have been awarded *CSIR Fellowships* (Junior) for research on projects noted against their names:

1. SHRI V.K. MATHUR—*Magneto-chemical studies in organo-inorganic complexes* (University of Allahabad, Allahabad).

2. SHRI A.N. DEY—*Absolute values of rate constants in addition polymerization* (Indian Association for the Cultivation of Science, Calcutta).

3 & 4. SARVASHRI N.K. DAS PURAKAYASTHA & S.K. GUHA—*A study of submerged combustion and design of dust filters* (Jadavpur University, Calcutta).

5 & 6. SHRI M. UMAMAHESWARA RAO & KUMARI UMA KAPOOR—*Studies on some botanical aspects of oceanography of the Visakhapatnam coast* (Andhra University, Waltair).

Research Schemes Terminated

The following schemes have been terminated with effect from Feb. 29, 1960.

1. *Utilization of lignin and ligno-cellulosic waste*—Dr. D. Narayanamurti, Forest Research Institute and Colleges, Dehra Dun.

2. *Investigation of the possibilities for a system of qualitative chemical analysis based on calcium sulphate and chalk crayon chromatography*—Prof. B.N. Sen, Syam Sunder College, Burdwan.

3. *Studies in lampbrush chromosomes in the oocytes of certain fishes, frogs, reptiles and birds*—Dr. M.D.L. Srivastava, University of Allahabad, Allahabad.

4. *Jute resins (natural and synthetic) combinations*—Dr. I.B. Chakravarti, Indian Jute Mills Association Research Institute, Calcutta.

5. *Design and development of air speed indicator*—Dr. I.R. Rao, Madras Institute of Technology, Madras.

6. *Design and development of two seater sail plane*—Shri I. Ramakrishna Rao, Madras Institute of Technology, Madras.

7. *Phase converters—Rotary & static*—Shri M. Maria Louis, Thiagarajar College of Engineering, Madurai.

RESEARCH IN PROGRESS

National Laboratories

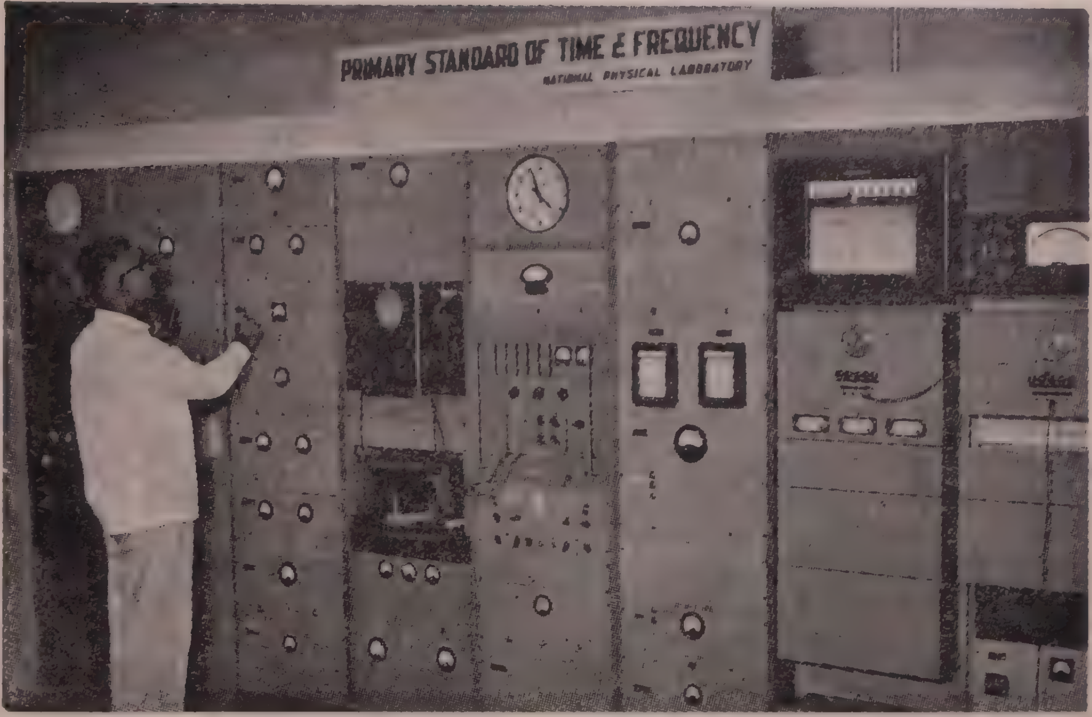
NPL, NEW DELHI

Standard Frequency and Time Transmission—A standard frequency nd time transmission centre, ATA, Delhi, has been established at Kalkaji, a suburb of New Delhi. This is the first centre working in South Asia, the nearest ones being ituated at Turino, Italy in West and Tokyo, Japan, in the East.

The broadcast of time signals is carried out over a standard carrier frequency of 10 Mc/s. (30 meters). The signal consists of second's pluse, minute's pulse, a 1000 c/s tone, and a code announcement. The second's pulse is a group of five cycles of a 1000 c/s signal, and the minute's pulse a group of hundred cycles of a 1000 c/s signal. The standard tone is broadcast for a period of 4 min. every 15 min. (0-4, 15-19, 30-34 & 45-49 min. every hour). The code announcement, giving the station call sign and the time in U.T., is transmitted at 20 sec. before the start of the tone. This transmission can be heard during the hours 1100 to 1600 I.S.T. for five days a week—Monday to Friday.

Highly stable piezoelectric quartz crystals are utilised as master oscillators that control standards clocks. Three such crystal standards are mounted on vibration-free concrete pillars, erected inside air-conditioned underground cellars. All the clocks and their associated time control equipments are electronically operated and mentioned in continuous operation.

The time signals are correct to a millisecond per day and the frequency is constant to ± 2 parts in 100 million over a nominal value. This high precision is achieved by he continuous comparison of the standards among themselves and by he check-up of the time signals against those received from similar stations established in other countries—C.S. RANGAN.



PRIMARY STANDARD OF TIME & FREQUENCY
NATIONAL PHYSICAL LABORATORY

NPL, NEW DELHI—Control Room of the Standard Frequency and Time Transmission Centre established at Kalkaji, Delhi

CGCRI, CALCUTTA

Glass Sands from Rajasthan—Sand samples from six deposits in Rajasthan, two from Barodia (No. 1 & 2) three from Allanpur (No. , 2 & 3) and one from Kundi were examined for their suitability for use in the glass industry. The sand from deposit No. 2 from Barodia is suitable, even without processing, for making descolorised glass; Barodia sand No. 1 and Allanpur sand No. 1 can be used after processing, screening, washing and magnetic separation; sands No. 2 and 3 from Allanpur and that from Kundi are suitable, after processing, for use in making pale green and amber-coloured glasses.

CDRI, LUCKNOW

Vitamin C in Pharmaceutical Preparations—The stability of ascorbic acid (vitamin C) after 3 months' storage in the presence of 0.02 per cent calcium, copper, iron and magnesium salts has been studied using different bases (glycerol, sorbitol, and sugar syrup) of different concentrations at *p*H 4.0.

The vitamin is stable in the presence of copper ions when glycerol is used as base; in aqueous solutions of glycerol, however, ascorbic acid is unstable, even in the absence of metals.

Ferrous sulphate affords a slight protection to ascorbic acid in sorbitol base. In general, syrup is a better vehicle for vitamin C than sorbitol in the presence of metal ions. In formulations containing syrup, calcuim and magnesium ions are more harmful than copper.

The stability of ascorbic acid is dependent on the concentration of bases. Increase in the proportion of water adversely affects stability —V. K. MOHAN RAO.

RRL, HYDERABAD

Barium Chemicals from Barytes—The preparation of barium chemicals from barytes involves two steps. In the first, barytes is reduced to barium sulphide; it is converted to the required salt by further treatment.

For the preparation of sulphide, two reducing agents, namely, semi-coke and pitch, have been used. When barytes ($BaSO_4$, 99.4 per cent) is heated with semi-coke in the proportion 1:0.2 at 950°C. for 2 hr. barium sulphide is obtained in 54 per cent yields; when the proportion of semi-coke is raised to 1:0.3, the yield of sulphide increases to 84 per cent. The yield of sulphide is as high as 90 per cent when pitch is used as the reducing agent, the proportion of barytes to pitch being 1:0.2. The conversion of barytes to barium sulphide is quantitative when water gas is used for reduction.

Barium chemicals are imported into India to the value of Rs. 8 lakhs annually—D. S. DATAR, Y. VENKATESHAN, K. N. MOORTHY, M. K. H. SIDDIQUI & MRS. RAZIA FAROOQUI.

In Parliament

Enriched Flour—Prof. Humayun Kabir, Union Minister for Scientific Research & Cultural Affairs informed the Rajya Sabha that consumer acceptability trials have been conducted on Enriched Flour (*Paushtik atta*) prepared by CFTRI, Mysore and that results have been satisfactory.

Paushtik atta is a blend of whole wheat flour (75%), edible groundnut flour (8%) and tapioca flour (17%). Its protein content is higher than that of whole wheat (*March 2, 1960*).

Process Ready for Exploitation

TRANSISTORISED COMMUNITY RECEIVER

The *National Physical Laboratory*, New Delhi has worked out a process for the production of Community Receivers in which valves have been partly replaced by transistors. The receiver conforms to Indian Standards Specifications in design and performance.

The cost of the transistorised receiver is less than that of the usual valve type of receiver; its fabrication does not require extensive instrumentation facilities. It consumes 40 per cent less battery power than the common type.

Parties desirous of taking up the commercial development of the receivers may correspond with the Secretary, National Research Development Corporation, Mandi House, New Delhi.

PERSONAL

(*Contd. from p. 1, col. 3*)

● SHRI KARTAR SINGH has been appointed, Section Officer: Grade III CSIR Secretariat, New Delhi, with effect from February 29, 1960.

● SHRI R. K. MITAL has been appointed, Section Officer: Grade III, CSIR Secretariate, New Delhi, with effect from February 29, 1960.

* * *

● SHRI M.V. RAMAN, Junior Scientific Officer, CBRI, Roorkee, left for Australia for higher studies in *Prestressed Concrete* under the Colombo Plan. He will also attend the short-term courses on (i) Plastic behaviour and design of steel structures and (ii) Development in reinforced concrete and their relation to modern construction.

● DR. S. HUSAIN ZAHEER, Director, RRL, Hyderabad, has been appointed Director of the *Sindri Fertilizers & Chemicals Ltd.* and *Hindustan Chemicals & Fertilizers Ltd.*

● DR. K. VENKATARAMAN, Director, NCL, Poona, has been, nominated a CSIR representative on the *Development Council for Artificial Silk*, Union Ministry of Commerce & Industry.

● DR. J. W. WHITAKER, Director, CMRS, Dhanbad, has been renominated a CSIR representative on the *Development Council for Internal Combustion Engines and Power Driven Pumps*, Union Ministry of Commerce & Industry.

● DR. K.N. MATHUR, Director, Central Scientific Instruments Organisation has been coopted a member of the *Board of Studies in Physics* of the Lucknow University.

● SHRI KAMLESH RAY, Asst. Director, National Register Unit, New Delhi, has been nominated a CSIR representative on the *National Council for Training in Vocational Trades* for a period of 3 years with effect from May 24, 1960.

FORM IV

(See Rule 6)

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I, B.N. Sastri, hereby declare that the particulars given above are true to the best of my knowledge and belief.

Feb. 29, 1960

(Sd.) B.N. SASTRI
Signature of Publisher

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To Design Buildings for Thermal Comfort

by

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G. N. SARMA & SHARAFAT ALI
CBRI, Roorkee

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CSIR NEWS

VOL. 10 [illegible] NEW DELHI—MARCH 26, 1960 : CHAITRA 6, 1882 No. 6

PETROLEUM INSTITUTE TO BE ESTABLISHED

The Board of Scientific & Industrial Research and the Governing Body of the Council of Scientific & Industrial Research met in New Delhi on March 22 and March 23, 1960 respectively. The Prime Minister, Shri Jawaharlal Nehru, presided.

New Institutes

The Governing Body approved the establishment of an *Institute of Petroleum* at Dehra Dun for undertaking training, research and documentation in the field of petroleum and natural gas. An Executive Council for the Institute consisting of the following has been constituted: Minister, Mines & Oil, (*Chairman*); Prof. M. S. Thacker, Director-General, Scientific & Industrial Research; Shri K.K. Sahni, Joint Secretary, Department of Mines and Fuel; Shri J. M. Shrinagesh, Managing Director, Indian Refineries Ltd.; Shri A. M. N. Ghosh, Member (Technical), Oil and Natural Gas Commission; Dr. A. Lahiri, Director, CFRI, Jealgora; Dr. J. W. Whitaker, Director, CMRS, Dhanbad; Dr. D. S. Kothari, Scientific Adviser to the Minister for Defence; Shri G. B. Stanger, Managing Director, Burmah-Shell Refinery Co.; A chemist from the oil industry; and Financial Adviser to CSIR or his nominee (*Members*).

The draft plan for the *National Aeronautical Laboratory*, Bangalore was approved in principle. It was recommended that the first part of the plan pertaining to the establishment of the transonic/supersonic wind tunnel should be implemented immediately.

The Governing Body approved of the proposal of the Executive Council of the *Regional Research Laboratory, Assam* to create two divisions: *Applied Chemistry* and *Engineering* in the first instance.

Pilot Plant

Setting up of a pilot plant for recovery of potassium chloride from (1) mixed salt and (2) mixed salt and bitterns at the Central Salt Research Institute, Bhavnagar was approved.

Grants-in-aid

The Governing Body sanctioned grants-in-aid to 64 new research schemes (list given at p. 3).

Sanction has been given to a grant of Rs. 20,017 to the Indian Central Oilseeds Committee as Councils' share towards the cost of extensions to the buildings at the Department of Chemical Technology, Bombay and the Oil Technological Institute, Anantapur as part of Vegetable Oils Research Programme during the Second Five-Year Plan.

A grant of Rs. 28,250 has been sanctioned, towards the recurring expenditure, for the Indian Rubber Manufacturers' Research Association for 1960-61.

Symposia and Seminars

Holding of the following symposia, seminars and conferences during the year were approved.

SYMPOSIA

1. *Physics of Cloud and Rain in the Tropics*—Joint auspices of the Rain & Cloud Physics Advisory Committee of the CSIR, the India Meteorological Department, the Indian Air Force (Meteorology) Branch) and the India Meteorological Society.

2. *Proteins*—Chemical Research Committee.

3. *Redox Processes*—Chemical Research Committee.

4. *Plant Embryology*—Biological Research Committee.

5. *Electrical Machine Designs*—Electrical and Mechanical Engineering Research Committee.

6. *High Atmosphere*—Radio Research Committee.

SEMINAR

7. *Public Health Engineering*—Central Public Health Engineering Research Institute, Nagpur.

CONFERENCES

8. *Second Physics Conference on Solid State Physics and Geophysics, Atmospheric Physics, etc.*—Physical Research Committee.

9. *Conference to discuss a long term programme of research on Corrosion Problems*—Metals Research Committee.

PERSONAL

●PROF. M. S. THACKER, Director-General, Scientific & Industrial Research, has been nominated a member of the *National Nutrition Advisory Committee* appointed by the Union Ministry of Health.

* * *

●DR. K. C. GUPTA has been appointed Senior Scientific Officer: Grade II, RRL, Jammu, with effect from March 7, 1960.

●SHRI C. T. THOMAS, Section Officer, CECRI, Karaikudi, has been transferred to CGCRI, Calcutta. He was relieved from CECRI with effect from February 25, 1960.

* * *

●DR. K. S. KRISHNAN, Director, NPL, New Delhi, who left for Paris on March 8 to attend Unesco meeting (March 14 to 19) on Compilation of a Report on the Main Trends of Scientific Research in the Natural Sciences returned to New Delhi on March 21, 1960.

●SHRI M.S. VENKATACHALAPATHY, Senior Scientific Assistant, CECRI, Karaikudi, returned from Poland after completing his training in *Electro-Organic Chemistry* under United Nations Fellowship Programme.

* * *

●DR. V. SUBRAHMANYAN, Director, CFTRI, Mysore, has been nominated a member of the *National Nutrition Advisory Committee*, Union Ministry of Health.

●DR. S. HUSAIN ZAHEER, Director, RRL, Hyderabad, has been renominated a CSIR representative on the *Development Council for Acids and Fertilizers*, Union Ministry of Commerce & Industry.

(*Contd. on page 2, col. 2*)

BRIEFS

Utilization of By-products of Leather Industry

The three-day symposium on Utilization of By-products of Leather Industry organized by the *Central Leather Research Institute*, Madras ended on Feb. 12, 1960. Prof. M.S. Thacker, Director-General, Scientific & Industrial Research inaugurated the symposium. The inaugural function was presided over by Shri R. Venkataraman, Minister for Industries and Labour, Government of Madras. About 100 scientists and technologists including delegates from Indian tanneries and leather industry participated in the symposium.

Thirty-nine papers were presented and discussed in 3 technical sessions presided over by Shri N. V. Modak, Director, CPHERI, Nagpur; Shri M. L. Khaitan, Chairman, Bata Shoe Co. (P) Ltd., Calcutta ; and Shri P.R. Sondi, Managing Director, Kapurthala Northern India Tanneries Ltd., Kapurthala. The papers covered the following subjects : Tannery effluents ; manufacture of glue and gelatine ; utilization of carcass by-product like bone, horns, intestines and pancreas ; utilization of leather shavings and hide fleshings ; leather boards from leather waste ; goat hair ; sheep wool ; sausage casings ; animal feed ; manufacture and uses of foam compounds, and utilization of pig skins.

The papers presented in 3 technical sessions have been published in 3 parts. Copies of the publications (price Re. 1 each part) are available from the Director, Central Leather Research Institute, Madras.

Cottonseed & its By-products

The proceedings of the symposium on Cottonseed and its By-products held at the *Regional Research Laboratory, Hyderabad* in December 1958 have been published.

The 358-page publication includes 41 papers presented and discussed at the symposium. The papers are grouped under the following sections: (1) Agricultural and compositional studies on cottonseed ; (2) Processing, storage and keeping quality ; (3) Solvent extraction ; (4) Refining of cottonseed oil ; (5) Hydrogenation of cottonseed oil ; (6) By-products ; (7) Fundamental studies ; and (8) General considerations.

Copies of the publication (price Rs. 10) are available from the Director, Regional Research Laboratory, Hyderabad *or* Secretary, Indian Central Oilseeds Committee, Hyderabad.

Training in Electroplating

Prof. K.S.G. Doss, Director, CECRI, Karaikudi inaugurated on March 22, 1960 the three-month course on Electroplating (*CSIR News*, Vol. 10, No. 4, p. 1) at the Institute.

Research Committee

Dr. P. K. Bose, Head of the Department of Chemistry, Bose Institute, Calcutta, has been nominated a member of the *Chemical Research Committee* till March 31, 1962.

Research Fellowships

The following have been awarded *CSIR Fellowships* (Junior) for research on projects noted against their names :

1. Shri Shyamal Kanti Chakraborty—*Structure and genesis of Singhbhum granite.* (Presidency College, Calcutta).
2. Shri Kanakandu Rai—*Underground corrosion of metals and alloys under Indian conditions* (Bengal Engineering College, Howrah).
3. Shri Eric John Singh—*Inorganic micro-chemistry using Weisz ring oven technique* (University of Allahabad, Allahabad).

PERSONAL

(*Contd. from p. 1, col. 3*)

●Dr. A. Lahiri, Director, CFRI, Jealgora, has been elected a member for the *Chemical Engineering Board of Courses and Studies* of the Bihar University.

●Dr. A. B. Biswas, Assistant Director, NCL, Poona, has been nominated a member of the *Naval Research and Development Panel* constituted by the Union Ministry of Defence.

●Shri Y. K. Raghunath Rao, Asst. Director, CFTRI, Mysore, has been nominated a member of the ad hoc Committee on *Rice Bran Oil Solvent Extraction*, Union Ministry of Commerce & Industry.

●Shri R.V. Lele, Senior Scientific Officer, CGCRI, Calcutta, has been nominated a member of the Sub-Committee for Preparing the Scheme of Examination for Diploma Courses in Textile Technology and Ceramics, State Board of Technical Education, Bihar.

●The following officers have been nominated members of the Committee/Panel of the *Indian Standards Institution.*

Shri Y. K. Raghunath Rao, Asst. Director, CFTRI, Mysore—*Dairy Utensils Sub-Committee.*

Shri T. N. Seshadri, Asst. Director, CBRI, Roorkee—*Daylight Standards Sub-Committee.*

Dr. S. Sen, Senior Scientific Officer, CGCRI, Calcutta—*Dairy Laboratory Apparatus and Glassware Sub-Committee.*

* * *

●Dr. Atma Ram, Director, CGCRI, Calcutta, has been elected Vice-President of the *Institution of Chemists* (*India*) for 1960.

●Shri A. Rehman, Asst. Director, CBRI, Roorkee, has been elected member of the *Board of History of Science*, National Institute of Sciences, India.

●Shri M. A. Ansari, Librarian, CBRI, Roorkee, has been elected a member of the Council of the *Indian Association of Special Libraries and Information Centres* for the years 1960 and 1961.

Dr. L. Torstensson

Dr. Lennart Torstensson has been working as Unesco Expert at the National Physical Laboratory, New Delhi on an assignment of six months since Sept. 8, 1959. He is engaged in development work on electron guns and reflex-klystron.

Dr. Torstensson, M. E. (*b.*, June 21, 1925, Sweden) after "Student Examination" in Linkoping worked at Chalmers Institute of Technology, Gothenburg (1945-50) ; Microwave Tube Development Laboratory of the L. M. Ericsson Telephone Company, Stockholm (1950-58); and Institution of Electronics of the Royal Institute of Technology, Stockholm (1958-59).

NEW RESEARCH SCHEMES SANCTIONED

On the recommendation of its Advisory Board the Governing Body of the Council have sanctioned the following new research schemes :

Aeronautical Research

1. *Chemical reactions during flow through a rocket nozzle*—Dr. R. P. Rastogi, Chemistry Department, Lucknow University, Lucknow.

2. *Study of the diffusion of a jet in an opposing flow field*—Shri S. Nagaratnam, Assistant Professor (Hydraulics), P. S. G. College of Technology, Coimbatore.

3. *Shock waves in fluid dynamics and magneto-hydro-dynamics*—Dr. R. S. Misra, Professor and Head of the Department of Mathematics, University of Gorakhpur, Gorakhpur.

Biological Research

4. *Studies on inheritance of radiation induced and spontaneous mutations in* Escherchia coli *communior-phage system*—Dr. A. Guha, Lecturer in Biophysics, Saha Institute of Nuclear Physics, Calcutta.

5. *Studies on the evolution, distribution and function of B-chromosomes with particular reference to male sterility in* Plantago Sp.—Dr. R. L. Paliwal, Associate Professor of Botany, B.R. College, Agra.

6. In-vivo *studies on the effects of physical and chemical agents on the chromosomes of the grasshopper spermatocytes*—Dr. S. P. Ray Chaudhuri, Reader in Zoology, University College of Science & Technology, Calcutta.

7. *Botanical exploration of Tungar Hill (Dt. Thana) Bombay State*—Rev. H. Santapau, Professor of Botany and Dean of Science Faculty, St. Xavier's College, Bombay.

8. *Physiological and biochemical studies on mitochondria of different organs of animals on adaptation to cold and warm temperatures*—Dr. M. S. Kanungo, Department of Zoology, Ravenshaw College, Orissa.

9. *Conditioning and hypnosis*—Dr. J.P. Das, Lecturer in Psychology, Utkal University, Cuttack.

10. *Protection of timber against marine organisms*—Dr. A. Purushotham, Officer-in-charge, Wood Preservation Branch, Forest Research Institute, Dehra Dun.

Chemical Research

11 & 12. *Chemical reactions initiated by ultrasonic waves ;* and *Influence of ultrasonics on colloidal systems*—Dr. Satya Prakash, Assistant Professor, Department of Chemistry, Allahabad University, Allahabad.

13 & 14. *Vapour phase oxidation of organic compounds ;* and *Kinetic studies of the aromatic substitution reactions*—Dr. A.N. Bose, Assistant Professor, Chemistry Department, Lucknow University, Lucknow.

15. *Colloid chemical interaction between polymeric electrolytes and colloids derived from clays*—Dr. B. R. Nagar, Research Officer, Indian Association for the Cultivation of Science, Calcutta.

16. *Studies in pressure-drop, heat transfer and mass-transfer in fluidized beds of solids*—Shri V. V. Deshpande, Shri Ram Institute for Industrial Research, Delhi.

17. *Studies in the preparation of starch derivatives particularly ethers and their applications in textiles field*—Dr. H.R. Chipalkatti, Shri Ram Institute for Industrial Research, Delhi.

18 & 19. *Stereochemical investigations in heterocyclic systems ;* and *Chemistry of indole alkaloids and lactones*—Dr. (Mrs.) Asima Chatterjee, Reader in Chemistry, University College of Science, Calcutta.

20. *Development of polyesters from terphthalic acid and ethylene glycol suitable for fibres*—Shri R. T. Thampy, Shri Ram Institute for Industrial Research, Delhi.

21. *Change in cell chemistry following artificial treatment with physical agencies*—Dr. A.K. Sharma, Department of Botany, Calcutta University, Calcutta.

22. *Studies on insect biochemistry*—Dr. (Mrs.) Radha Pant, Assistant Professor of Biochemistry, University of Allahabad, Allahabad.

23. *Synthetic studies in colchicine and analogues*—Dr. Dhanonjoy Nasipuri, Lecturer in Chemistry, University College of Science, Calcutta.

24. *Preparation of chemical resistant paint vehicles from vegetable oils* and *Preparation of commercially useful products from dimerized fatty acids*—Shri R. K. Bhatnagar, Shri Ram Institute for Industrial Research, Delhi.

25. *Chemotherapy of diabetes*—Dr. S.S. Tiwari, Assistant Professor of Chemistry, Lucknow University, Lucknow.

26. *Studies in continuous and semi-continuous alkali fusions with particular reference to dibenzanthrone & indanthrone*—Dr. B. D. Tilak, Professor of Dyestuff Technology and Prof. M.B. Joshi, Professor of Engineering, Department of Chemical Technology, University of Bombay, Bombay.

27 & 28. *Synthetic polyampholytes as model for protein denaturation; and Thermodynamics of liquid mixtures*—Prof. Santi R. Palit, Professor of Physical Chemistry, Indian Association for the Cultivation of Science, Calcutta.

29. *New synthesis of unsaturated macrocyclic compounds*—Dr. P. C. Mukherji, Professor of Chemistry, Presidency College, Calcutta.

30. *Studies in application of acyl and alkyl phenols and their derivatives by water-proofing and rot-proofing compounds for cellulosic textiles*—Dr. R. M. Desai, Shri Ram Institute for Industrial Research, Delhi.

31. *Enzymes of fatty acid metabolism in protein malnutrition*—Dr. T.A. Venkitasubramanian, Assistant Director (Biochemistry) and Dr. R. Viswanathan, Director, Vallabhbhai Patel Chest Institute, Delhi.

32. *Effects of calorie and protein variations in diet on the regeneration of protein and enzymes of the liver after fasting, with special reference to B vitamins deficiency*—Miss Anubha Chowdhary, Lecturer, Nutrition Department, Lady Irwin College, New Delhi.

33. *Photosynthesis of amino acids*—Dr. Krishna Bahadur, Chemistry Department, Allahabad University, Allahabad.

34. *Synthetic studies in diterpenoid acids*—Prof. P. C. Dutta, Professor and Head of the Department of Organic Chemistry, Indian Association for the Cultivation of Science, Calcutta.

35. *Role of sex-hormones in the interrelationship between essential fatty acids and cholesterol metabolism*—Dr. Supravat Mukherjee, University College of Science and Technology, Calcutta.

36. *Reaction in liquid phase*—Dr. Jagdish Sahu, L. S. College, Muzaffarpur.

Civil Engineering & Hydraulic Research

37. *Characteristics of two dimensional submerged jet*—Shri S. Nagaratnam, Assistant Professor, P. S. G. College of Technology, Coimbatore.

38. *Basic study and application of sands, aggregates and limes available in Rajasthan*—Shri Alam Singh, Assistant Professor of Civil Engineering, M. B. M. Engineering College, Jodhpur.

39. *Torsional failure of axially and eccentrically loaded thin walled struts made of cold rolled light gauge sections in steel and aluminium alloy, etc.*—Shri S. Divakaran and Shri R. D. Patwardhan, Assistant Professors of Civil Engineering, M. B. M. Engineering College, Jodhpur.

40. *Studies in skid resistance of road surfaces*—The Director, Highways Research Station, Madras.

Electrical & Mechanical Engineering Research

41. *Conductivity measurements of textile fibres by capacitance charge method and evaluation of effects of different antistatic agents on the electrification of fibres*—Dr. S. M. Sen, Professor of Electrical Engineering, M. S. University of Baroda, Baroda.

Geological & Mineralogical Research

42. *Influence of physico-chemical processes on the sedimentary depositional environments off east coast of India*—Prof.C. Mahadevan, Head of the Department of Geology and Principal, Andhra University Colleges, Waltair.

43. *Exploration of the origin of radioactivity and rare gases in thermal springs of India and a mineralogical survey of the juvenile sources*—Dr. S. D. Chatterjee, Department of Physics & Dr. S. Deb, Department of Geological Sciences, Jadavpur University, Calcutta.

Physical Research

44. *Studies in paramagnetic resonance*—Shri Devulapalli Premaswarup, Lecturer in Physics, Andhra University, Waltair.

45. *Spectroscopy in the visible and ultraviolet regions under high dispersion*—Dr. P. Tiruvenganna Rao, Reader in Physics, Andhra University, Waltair.

46. *Study of molecular relaxation processes in liquids by ultrasonics*—Dr. G. S. Verma, Assistant Professor, Department of Physics, University of Allahabad, Allahabad.

47. *Ultrasonic studies in liquids and liquid mixtures in relation to their molecular properties*—Dr. Bh. Krishnamurthy, Department of Physics, Andhra University, Waltair.

48. *Study of the molecular size distribution in polymers on degradation or polymerization*—Dr. V. S. Nanda, Physics Department, University of Delhi, Delhi.

49. *Emission and absorption spectra of simple molecules*—Prof. Devendra Sharma, Professor of Physics, University of Gorakhpur, Gorakhpur.

50. *X-Ray and electron microscopic study of bacterial cellulose*—Dr. V. D. Gupta, Assistant Professor, Department of Physics, University of Allahabad, Allahabad.

51. *Ultra-soft X-ray diffraction of macro-molecules*—Dr. K. Das Gupta, Department of Physics, Calcutta University, Calcutta.

52. *Electrical properties of textile materials (including artificial fibres)*—Shri A. Pande, Shri Ram Institute for Industrial Research, Delhi.

53. *A solid state Maser amplifier and relaxation phenomenon in paramagnetic crystals*—Dr. Prem Swarup, J. K. Institute of Applied Physics, University of Allahabad, Allahabad.

54. *Thermo-elastic behaviour of single crystals and metals*—Dr. J. Bhimasenachar, Reader in Physics, S. V. University College, Tirupati.

55. *Mechanical properties of polymers by ultrasonic methods*—Dr. V. V. Varadaiah, Reader in Physics, Osmania University, Hyderabad.

56. *Studies on the ionization and fragmentation of molecules by electron impact using a mass-spectrometer*—Dr. S. N. Ghoshal, Professor of Physics, Presidency College, Calcutta.

57. *Imperfection in crystals and the study of the growth and etch phenomena in crystals*—Prof. A. R. Verma, Head of the Department of Physics, Banaras Hindu University, Banaras.

Pharmaceuticals and Drug Research

58. *Fractionation of human placental proteins and human blood plasma with special reference to the isolation of albumin, fibrinogen and gamma globulins*—Dr. S. Srinivasa Rao, Haffkine Institute, Bombay.

59. *Synthesis and studies on antidiabetic drugs*—Dr. U. P. Basu, Bengal Immunity Research Institute, Calcutta.

60. *Biochemical and immunological investigation of the toxins of* Clostridia—Dr. H. I. Jhala, Director, Haffkine Institute, Bombay.

Radio Research

61. *Studies of the sporadic E-region in the ionosphere*—Prof. S. R. Khastgir, Department of Pure Physics, University Science College, Calcutta.

62. *Application of analogue computer for the study of nonlinear servo problems*—Prof. J. N. Bhar, Sir Rashbehary Ghose Professor of Physics and Head of the Department of Radio Physics and Electronics, Institute of Radio Physics & Electronics, Calcutta.

63. *Studies on enhanced solar radio emission at two harmonically related frequencies* (50 Mc/s. and 100 Mc/s.)—Dr. M. K. Das Gupta, Reader, Institute of Radio Physics & Electronics, University College of Technology, Calcutta.

Scientific Instruments

64. *Production of precision curved surfaces and photographic objectives and projectors*—Prof. S. Hariharan, Madras Institute of Technology, Madras.

RESEARCH SCHEMES TERMINATED

The following schemes have been terminated with effect from Feb. 29, 1960.

1. *Use of lime mortar and lime puzzolana mortar in place of cement*—Shri J. Waltor, Soil Mechanics and Research Division, Madras.

2. *Allometric growth in appendiates of Indian fresh water prawns*—Dr. R. K. Misra, University of of Saugar, Saugar.

3. *Cosmic radio noise investigations in the UHF & VHF bands*—Shri R. Sitaram, Madras Institute of Technology, Madras.

RESEARCH IN PROGRESS

National Laboratories

NML, JAMSHEDPUR

Aluminizing of Steel Wire—A process for producing aluminized steel wire by hot-dip method using an aqueous flux has been developed and patented. The product has lustrous appearance, is free from roughness and has a uniform aluminium coating with controlled intermetallic interfacial layers. It can replace galvanized steel wires particularly where resistance to heat is essential.

The process is being investigated on a pilot plant which has been designed and fabricated at the Laboratory.

NML, JAMSHEDPUR—Hot-dip aluminizing pilot plant designed and fabricated at the Laboratory

CFRI, JEALGORA

Hardness of Coke—The applicability of U. Grouf *et al*. method, which is based on statistical study of the correlation between sieve fractions of cokes before and after Micum (Trommel) test, for the determination of hardness of Indian cokes has been studied. The coke samples were prepared from straight coking coals in the pilot plants of the Institute and those prepared in commercial coke ovens. Based on the Hardness Factors obtained by the above method the Indian cokes have been divided in three types (Types, A, B & C). It is observed that Hardness Factors of Indian metallurgical cokes are generally low though they satisfy the I. S. specifications in all respects.

A correlation between the Micum and Shatter Indices and Hardness Factor has been observed.

The method has also been used for determining the Uniformity Factor (index of uniformity of hardness) of Indian cokes. The value agrees well with that of European cokes—S. BANERJEE, K. RAJA & N. N. DAS GUPTA.

CGCRI, CALCUTTA

White Enamels—Compositions for producing antimony-free vitreous enamels have been developed. The enamels when tested for their performance under industrial conditions in an enamelling factory gave satisfactory results.

CFTRI, MYSORE

Vegetable Milk Powder—Conditions have been standardized for the preparation of vegetable milk powder fortified with vitamins and minerals from a blend of soyabean (2 parts) and groundnut (1 part). Experiments on animals have shown that the powder milk (containing 3.5 percent protein) has a growth promoting value slightly lower than that of cow's milk. Studies on the shelf life of the product are in progress.

Storage of Nutro Biscuits—Samples of freshly manufactured Nutro biscuits (enriched biscuits using groundnut flour as protein source, obtained from a commercial firm were examined after storage for varying periods at room temperature and at 37°C. No loss in riboflavin and nicotinic acid contents of biscuits were observed in 7 months. A slight decrease in thiamine content of biscuits stored at 37°C. was observed. The sample were organoleptically acceptable after a storage period of 7 months.

CLRI, MADRAS

Protein Hydrolysates from Tannery and Carcass By-products—Investigations on better utilization of tannery and carcass by-products have resulted in the development of methods for the preparation of protein hydrolysate from limed hair, limed fleshings and trimmings, leather shavings, meat meal, hoofs, horns, and blood. A hydrolysate, containing all the essential amino acids except tryptophane has been prepared.

NBG, LUCKNOW

Cultivation of Ferns—Collection and cultivation of ferns is in progress. Of the 193 species of ferns collected from Assam forests, 107 species have been successfully grown. Seven of these are new records for India. A new species of *Pteris* has been collected from Basistasram. Sixteen species of ferns, new to India, have been raised from spores obtained from botanical gardens of other countries.

RRL, HYDERABAD

Activated Earths—Studies have been in progress for preparing activated earths from indigenous sources suitable for bleaching lubricating oils. An earth from Mysore, comparable to an imported earth in respect of decolorizing efficiency, filtrability and settling properties has been developed. The earth imparts good heat and storage stability to bleached oil. It is suitable for reclamation of used lubricating oil which is normally contaminated with carbon, fuel oil, acids, oxidation products and dissolved water. The earth can also be used for purification of kerosene and naphtha—D.S. DATAR, E. R. SAXENA & M.A. SIDDIQUI.

PATENTS & PROCESSES

Application Filed

INDIA

70670 : *New compounds for water evaporation control*—(Miss) S.B. Kulkarni, M.K. Gharpurey, Noshir R. Sanjana, A.V. Deo, K.O. Abraham & B.C. Subba Rao, NCL, Poona.

Application Accepted

PAKISTAN

747/59 : *Process for the production of pesticidal compounds from turpentine oil*—B. Bhushan & S.H. Zaheer, RRL, Hyderabad.

Application Sealed

U.K.

12879/57 : *Isolation of keto-steroid from* Lantana camara *Linn.*—V.N. Sharma & K.N. Kaul, NBG Lucknow.

Processes Ready for Exploitation

4-HYDROXYCOUMARIN

The *National Chemical Laboratory*, Poona has developed a one-stage process (Indian Pat. Nos. 62890 & 63083) for the manufacture of 4-hydroxycoumarin starting from phenol and malonic acid. The method is simple and more economical than the conventional methods involving two or more stages. 4-Hydroxycoumarin is the key intermediate for the production of important anticoagulant drugs and rodenticides which are at present imported.

An alternate two-stage method starting with the same raw materials has also been worked out. 'Know-how' for the manufacture of anticoagulant drugs, Dicoumarol and Sodium Warfarin, and rodenticide, Warfarin, has been developed.

The manufacture of 4-hydroxycoumarin does not involve the use of special equipment and the process can be undertaken with advantage by the pharmaceutical or fine chemical factories. The capital investment required for large scale production is approximately Rs. 30,000.

Parties desirous of taking up the commercial development of the process may correspond with the Secretary, National Research Development Corporation, Mandi House, New Delhi-1.

HEXYLRESORCINOL

Hexylresorcinol or caprokol, as it is called in trade, is a well-known urinary antiseptic. It is also used in cases of rheumatoid arthritis and as a veternary anthelmintic. The drug is so far not manufactured in India.

A simple and economic method for manufacturing hyxylresorcinol from resorcinol and caproic acid has been worked out at the *National Chemical Laboratory*, Poona (Indian Pat. No. 57888).

A commercial unit capable of producing 200 kg. of hexylresorcinol annually is estimated to require a capital outlay of Rs. 11,000.

Parties interested in taking up the commercial development of the process may correspond with the Secretary, National Research Development Corporation of India, Mandi House, New Delhi-1.

Processes Leased Out

The following processes developed at the national laboratories have been leased out for commercial exploitation:

1. Manufacture of ceramic capacitors, NPL, New Delhi (Indian Pat. Nos. 53372, 53462, 53608 & 54263) —*Bharat Electronics Ltd.*, Bangalore.
2. Hard boards from fibrous materials, CFRI, Jealgora (Indian Pat. No. 56582)—*East and West Trading Co.*, Bombay.

Central Scientific Instruments Organization

An *Advisory Committee* for the Central Scientific Instruments Organization (CSIO) with the following has been constituted : DR. B.D. KALELKAR, Senior Industrial Advisor (Engg), Ministry of Commerce & Industry, New Delhi (*Chairman*); PROF. P.K. KICHLU, Delhi University, Delhi; DR. S. MULL, Director General of Observatories (Instruments), Meteorological Department, New Delhi; MAJ. GEN. B.D. KAPUR, Chief Controller, Defence Research & Development Organization, New Delhi; DR. A.S. RAO, Deputy Chief Scientific Officer, Atomic Energy Establishment, Bombay; SHRI A.S.E. IYER, Development Commissioner, Small Scale Industries, New Delhi; DR. LAL C. VERMAN, Director, Indian Standards Institution, New Delhi; a representative of the University Grants Commission; SHRI Y.A. FAZALBHOY, President, All-India Scientific Instruments Manufacturer's & Dealers Association, Bombay; SHRI N.M. ATHAVALE, Radio Lamp Works Ltd., Poona; SHRI SUBBA RAO, Andhra Scientific Co., Masulipatam; SHRI G. BHATTACHARYA, Managing Director, Adair Dutt & Co., Calcutta; Director-General, Scientific & Industrial Research; and Director, CSIO, New Delhi (*Members*).

NEW PUBLICATIONS

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CSIR NEWS

VOL. 10 NEW DELHI—APRIL 9, 1960 : CHAITRA 20, 1882 No. 7

LIBRARY

Seminar in Electrochemistry

A seminar in Electrochemistry will be held at the *Central Electrochemical Research Institute*, Karaikudi during April 23—25, 1960. Prof. M.S. Thacker, Director-General, Scientific & Industrial Research has kindly consented to inaugurate the seminar.

A large number of research papers pertaining to the fundamental and applied aspects of electrochemistry received from scientists and technologists in India and abroad (U.K., U.S.S.R., Belgium, Germany, Ceylon and Poland) will be presented and discussed in five technical sessions.

PERSONAL

●Shri S. Das Gupta has been appointed, on promotion, Administrative Officer : Grade I, IIBEM, Calcutta, with effect from Feb. 21, 1960.

●Shri H.S. Oberoi, Section Officer : Grade III, CSIR Secretariat, New Delhi, has been appointed, on promotion, Section Officer : Grade II, NPL, New Delhi, with effect from March 1, 1960.

●Shri N.S. Anand has been appointed, on promotion, Section Officer : Grade III, NPL, New Delhi, with effect from March 1, 1960.

●Shri A.K. Chaudhuri joined the CMERI, Durgapur, as Section Officer : Grade III, with effect from March 9, 1960, on transfer from CGCRI, Calcutta.

●Dr. R.L. Thakur, Senior Scientific Officer, CGCRI, Calcutta who in addition to his duties had been acting as Planning Officer, BITM, Calcutta resumed his duties in the CGCRI.

* * *

●Shri A. Bose, Planning Officer, BITM, Calcutta, after completion of Fellowship Programme in Museology in U.K., West Germany, France, Sweden, Austria and Italy under the United Nations Technical Assistance Programme returned and resumed duties with effect from March 14, 1960.

* * *

●Dr. K.S. Krishnan, Director, NPL, New Delhi, has been elected a member of the *Council of Honour* of the *Society for Visiting Scientists*, London. The other members of the Council are : Prof. Niels Bohr, Dr. Detlev W. Bronk, Prof. J. Hadamard and Sir Henry Dale.

●Dr. K.S. Krishnan has been renominated Chairman of the *Board of Research in Nuclear Science* of the *Department of Atomic Energy* up to March 31, 1961.

●Dr. K. Venkataraman, Director, NCL, Poona, has been renominated a member of the *Board of Research in Nuclear Science, Department of Atomic Energy* up to March 31, 1961.

●Dr. Y. Nayudamma, Director, CLRI, Madras, has been nominated a member of the *Technological Research Sub-Committee* of the Indian Central Arecanut Committee for 1960-61.

●Dr. Y. Nayudamma has been nominated Chairman of the Committee constituted by the Government of Andhra Pradesh to advise the Leather Industry in Andhra Pradesh.

●Shri V. Cadambe, Director, CMERI, Durgapur, has been nominated an alternate member to Prof. M.S. Thacker, Director-General, Scientific & Industrial Research on the *Government Test House Advisory Body*.

●Dr. K. N. Mathur, Director, CSIO, New Delhi, has been nominated Chairman of the *Engineering Metrology Sectional Committee* of the Indian Standards Institution.

●The following officers have been nominated members of the Committee/Panel of the *Indian Standards Institution :*

Dr. Sukh Dev, Asst. Director, NCL, Poona (Alternate Member to Dr. S.C. Bhattacharyya, Asst. Director)—*Essential Oils Sectional Committee* and *Methods of Test Sub-Committee.*

Dr. J. Gupta, Asst. Director (Principal Member) and Dr. Sukh Dev, Asst. Director (Alternate Member), NCL, Poona—*Fine Chemicals (Organic & Inorganic) Sectional Committee.*

Shri Prem Prakash, Asst. Director, NPL, New Delhi—*Engineering Metrology Sectional Committee* and *Atmospheric Conditions for Testing Sub-Committee.*

Shri Jatinder Mohan, Senior Scientific Officer, NML, Jamshedpur—*Panel for Coke Consumed in Gas Producers*, Coke Sub-Committee.

NML, JAMSHEDPUR—Pilot plant bay formally inaugurated by Prof. M. S. Thacker

BRIEFS

Training in Batteries

The *Storage Battery Technology Course* (Technical Training in Batteries) which commenced at the *Central Electrochemical Research Institute*, Karaikudi on Feb. 1, 1960 concluded on March 23, 1960. Six representatives from the following firms attended the course: *Bharat Battery Mfg. Co.*, Calcutta; *Standard Batteries Ltd.*, Bombay; *Western Battery Corpn.*, Bombay; *Mysore Electrochemical Works*, Bangalore; *Amco Batteries* (*P.*) *Ltd.*, Bangalore; and *Oldham & Sons* (*P.*) *Ltd.*, Madras.

Shri AL. AR. Somanathan Chettiar, Member, Advisory Committee, Air India International, presided over the function on the concluding day and distributed the certificates to the trainees.

IGY National Committee

The Indian National Committee for the IGY has issued News-letter Nos. 23, 24 & 25.

News-letter No. 23 (March 24, 1960) draws attention to the publication of the following two reports for programming of true ionospheric height calculations: (i) Special Report No. 28 (April 1959) by the Department of Scientific Research, U.K. and (ii) Scientific Report No. 106 (July 1958), Ionosphere Research Laboratory, Pennsylvania State University. It also gives information in regard to the publication of International Geophysical Calendar 1960 and reproduction charges of IGY data deposited with WDC-B Moscow.

News-letter No. 24 (March 24, 1960) outlines in brief the objective and composition of Committee on Space Research (COSPAR) as also India's participation in COSPAR.

The formation of the Comite Internationale de Geophysique (CIG) by the ICSU under the administrative control of the International Union of Geodesy and Geophysics (IUGG) as a successor to the Special Committee of the International Geophysical Year is recorded in *News-letter No. 25* (March 25, 1960.) Brief history of the Special Committee of the Inter-Union Cooperation in Geophysics (SGG) and CIG is included. The News-letter also gives the composition of CIG and its discipline members.

Research Fellowships

The following have been awarded *CSIR Fellowships* for research in schemes noted against their names:

Senior Fellowships

1. SHRI S. K. BALASUBRAMANIAN—*Conversion of abietic acid into a physiologically active steroid molecule* (Indian Institute of Science, Bangalore).
2. DR. D. N. CHAKRAVARTY—*Studies in inorganic complexes* (University of Allahabad, Allahabad).

Junior Fellowships

1. SHRI N.N. GIROTRA—*Terpenes and terpenoids* (Panjab University, Chandigarh).
2. SHRI B. SUGAVANAM—*Synthesis of steroids* (Indian Institute of Science, Bangalore).

* * *

The Director-General, Scientific & Industrial Research has been pleased to accept the resignation of the following Research Fellows:

1. SM. MAHARANI CHAKRAVARTY (Senior Fellow)—*Microbial synthesis of protein in relation to the biogenesis of nucleic acid* (Bose Institute, Calcutta).
2. SHRI BAIDYANATH GHOSH (Junior Fellow)—*Metabolic disorders in brain in vitamin deficiencies* (University College of Science & Technology, Calcutta).

Research Papers

ALGAL FLORA OF USAR LANDS IN UTTAR PRADESH—P. N. Saxena, NBG, Lucknow. *Sci. & Cult.*, **25** (1960), 542-43.

THERMAL EXPANSION OF SIMPLE IONIC CRYSTALS—S. Kumar, CGCRI, Calcutta. *Proc. nat. Inst. Sci. India*, **25** (1959), 364-72.

THE COLOURED PRODUCT OF SAKAGUCHI REACTION—K. R. Bhattacharya, IIBEM, Calcutta. *Nature, Lond.*, **184** (1959), 53.

APPLICATION OF SAKAGUCHI REACTION TO THE QUANTITATIVE ESTIMATION OF ARGININE: A METHOD INVOLVING PAPER CHROMATOGRAPHY—K. R. Bhattacharya, J. Datta & D.K. Roy, IIBEM, Calcutta. *Arch. biochem. Biophys.*, **84** (1959), 377.

FUNDAMENTAL STUDIES ON CORROSION—K.S. Rajagopalan & K. Balakrishnan, CECRI, Karaikudi. *Indian Constr. News*, **8** (11) (1959), 76-80.

U.S.S.R. Gift for CFRI

Two Sapozhnikov-type plastometers for studying the plastic properties of coals have been received by the *Central Fuel Research Institute*, Jealgora as gift from Vsesojuznoje Objedinenije "Tjazhpromexport", U. S. S. R. on Feb. 13, 1960 The equipment was formally handed over to the Institute by Mr. V. Sinko.

CFRI, JEALGORA—Sapozhnikov type plastometers received as gift from U.S.S.R. Mr. V. Sinko is seen signing the deed for handing over the apparatus on behalf of 'Tjazhpromexport'.

RESEARCH IN PROGRESS

National Laboratories

CFRI, JEALGORA

Shock-Heating of Coal—Production of metallurgical grade coke from weakly caking coal by shock-heating technique reported by Sapozhnikov (U.S.S.R.) has been investigated.

A mixture of 30 per cent Jharia (C, 87.08 %, dry ash free basis) and 70 per cent Raniganj (C, 78.45%) vitrains was shock heated in two ways. In the first, the sample taken in a stainless steel tube retort was shock-heated by immersing it into a bath of molten solder (kept at 700°C.) and keeping it under 7 lb. load for 3 min. until it attained a temperature of 440°C. In the second method the retort after shock treatment was kept under the load for ½ hour in a second bath maintained at 450°C. The shock-heated coal by both methods was transferred quickly to a tubular furnace kept at 450°C. and carbonized at the rate of 5°C./min. to a final temperature of 900°C. maintained for 2 hours, Improved cokes have been obtained by both treatments. The study leads to the following conclusions: (i) on shock-heating of coal by first method the hydroxyl group, surface area and alicyclicity decrease while the chloroform extractives increase; (ii) in the sample treated by the second method the alicyclicity, solvent extractives, hydroxyl group and surface area of coal decrease and (iii) the heat of wetting decreases in both the shock-heated samples—T. N. ROY, S. P. NANDI, K. A. KINI & A. LAHIRI.

CRRI, NEW DELHI

Stabilization of Marsh Lands—Based on the investigations carried out at the Institute adoption of vertical sand drains for the highway embankments on tidal swamps for the Eastern Express Highway Project, Bombay has been recommended. The sand drains accelerate the consolidation of the sub-soil with the result that the bulk of the soil settles prior to placing the pavement and stabilizes the fill. Use of drain wells in an equilateral pattern at 10 ft. spacing has been proposed.

The project is being carried out jointly with Public Works Department, Bombay.

RRL, HYDERABAD

Terpineol from Carene—A process for synthesising terpineol, an important perfumery material, from carene has been worked out on bench-scale. Hitherto pinene has been used as starting material for the production of terpineol. The process is of particular value for indigenous industry as Indian turpentine (*Pinus longifolia*) contains very little pinene and has carene as a major constituent. Pilot plant trials are under way to work out the project costs—S. JALEEL HASAN & BHARAT BHUSHAN.

Sponsored Research

Marine Sediments off Visakhapatnam—The study of marine sediments off Visakhapatnam coast with respect to grain size and mineral assemblages has led to the following conclusions: (i) The sands in shell zone sediments (at a depth of 35-48 fathoms) and those near the shore are similar in size and shape; (ii) the mechanical analysis of sediments supports the concept of lowered sea levels; (iii) sands of the shell zone sediments appear to have been deposited when the sea level was low during the pleistocene period; and (iv) the study of mineral assemblages indicates that the sediments are metamorphic in nature and that they are derived from coastal rocks—K. VENKATARATNAM & M. POORNACHANDRA RAO, Andhra University, Waltair.

Polymerization of Furfural—Polymerization of furfural and 5-hydroxymethylfurfural (HMF) using orthophosphoric acid as catalyst has been studied by viscometry. In the initial stages, the polymers obtained in both the cases were soluble in alcohol and acetone. But with the progress of polymerization they were found mostly insoluble in alcohol, but still soluble in acetone. Addition of water precipitated the polymers.

The time for gelation of furfural and HMF were observed about 110 hr. and 20 hr. respectively, The solubility of polymers in acetone was less than 2 per cent; they decomposed on heating and did not melt. Both the polymers in acetone solution on keeping for a few hours in an air oven at 100°C. gave rise to a glossy film which was sticky at the first stage ultimately becoming hard and brittle. The film was found to be insoluble in all common solvents—DR. P. K. CHOUDHURY & SHRI NIRMALENDU DUTT, University College of Science & Technology, Calcutta.

Mechanism of Experimental Hypercholesterolemia—The lipoprotein patterns of serum and arteries have been determined to study the mechanism of pyridoxine deficiency induced hypercholesterolemia in rats.

The serum protein pattern was determined by staining the strips after the run with bromophenol blue. The lipoprotein pattern was determined by employing three different methods: (i) by staining the strips with Sudan Black B after the run, (2) by running serum prestained with Sudan Black B in ethylene glycol and (3) by eluting the strips after the run and determining the cholesterol contents of the eluates of 2 mm. sections pooled from 2-3 stripes. The second method is superior to the first in giving a visual lipoprotein spectrum and the third method gives a quantitative idea of the lipoproteins, when compared with similarly run strips stained with bromophenol blue.

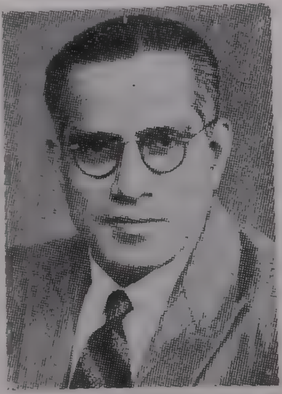
The results obtained so far indicate intense hyper-8-lipoproteinemia in pyridoxine deficiency-induced hypercholesterolemia. The protein pattern of the arteries are similar, indicating diffusion from the blood —DR. D.P. SANDHU, Bengal Veterinary College, Calcutta.

* * *

The Director-General, Scientific & Industrial Research has been pleased to accord approval to the transfer of the CSIR scheme, *Studies on nucleotide metabolism and biosynthesis of proteins* to DR. D.V. REGE, Reader in Food Technology, Department of Chemical Technology, Bombay University *vice* Dr. A. Sreenivasan who has joined CFTRI, Mysore.

Prof. T. R. Seshadri, F.R.S.

The election of Prof. T. R. Seshadri, Professor and Head of the Department of Chemistry, University of Delhi, as a *Fellow of the Royal Society*, London, for his researches into the chemistry of naturally occurring compounds, particularly flavonoids, has been announced. Prof. Seshadri is the first Indian organic chemist to have this distinction.



Prof. Seshadri (*b.* 1900, Kulittalai, Madras State) received his university education in the Presidency College, Madras. In 1927 he proceeded to Manchester to work under Prof. Robert Robinson. On his return to India, he worked for 3 years in the Agricultural Research Institute, Coimbatore. He joined the Andhra University in 1933 and was appointed Professor of Chemistry in 1937. During his 16 years of stay at the Andhra University, Prof. Seshadri was responsible for establishing a flourishing research school of chemistry and also the Departments of Chemical Technology and Pharmacy. In 1949, he was appointed Professor and Head of the Department of Chemistry, University of Delhi, and under his inspiring guidance, the Department of Chemistry, University of Delhi, has become an important centre for research in organic chemistry in India.

He has to his credit over 500 original research contributions and his work is largely concerned with the chemistry of plant products such as dyes, drugs and insecticides.

Prof. Seshadri is a Founder Fellow of the Indian Academy of Sciences, Fellow of the National Institute of Sciences of India, President, Royal Institute of Chemistry (North India Section) and is the Local Representative of the Chemical Society, London. He is a member of the Chemical Research Committee of CSIR and Chairman, Chemistry Advisory Committee of the Atomic Energy Commission.

PATENTS & PROCESSES

Application Filed

71063: *Production of bacterial protease by submerged culture*—Inderjit Babbar, V. K. Powar & V. Jagannathan, NCL, Poona.

Application Accepted

66197: *A new method for the oxidation of cumene to cumylhydroperoxide*—N. G. Basak, J. M. Sagar & A. Lahiri, CFRI, Jealgora.

Applications Sealed

64457: *A process for the manufacture of malted milk powder*—M. R. Chandrasekhara, M. N. Rao, M. Swaminathan, N. L. Lahiry, D. S. Bhatia & V. Subrahmanyan, CFTRI, Mysore.

65231: *An improved method for the production of chromium-manganese alloys by alumino-thermic reaction*—R. A. Sharma & P. P. Bhatnagar, NML, Jamshedpur.

Processes Ready for Exploitation

WATER DISPERSIBLE DDT PASTE

Working under a project sponsored by the Indian Council of Medical Research, the *National Chemical Laboratory*, Poona has developed a simple process for the preparation of water-dispersible DDT in the form of oil-bound paste. The preparation can be made either by cold or hot grinding.

The hot ground paste possesses the following advantages over wettable powders or emulsions: (i) It consists of thin needle shaped particles which give high covering power and easy accessibility to the insect even on rough surfaces; (ii) DDT particles in the paste have a coating of non-volatile lipoid dissolving oil layer rather than a dry surface as in wettable powders; this facilitates the transfer of the insecticide into the insect body coming in contact with it: (iii) inert fillers which make some of the active DDT surface inaccessible are not used in the formulation; moreover, the use of solvents required for the production of emulsions and solutions is dispensed with; and (iv) the paste possesses a suspensibility of 80-90 per cent which is much higher than that of wettable powders.

The process has been successfully tried on semi-pilot plant scale batches of 250-300 lb. per day. The plant required for its manufacture is simple and can be located at any place where raw materials, power, etc. are available.

Parties desirous of taking up the commercial development of the process may correspond with the Secretary, National Research Development Corporation, Mandi House, New Delhi.

Diethyl Stilbestrol

Diethyl stilbestrol—a synthetic estrogen—is widely used in hormone therapy and in the treatment of prostatic cancer. The country's requirements for the drug are met from imports.

The *National Chemical Laboratory*, Poona, has developed an economic method for the manufacture of diethyl stilbestrol starting with anisole. The method is based on the principle of Dodds' synthesis; improvements have been introduced in the synthesis of 4 intermediate compounds out of the total of 6. An overall yield of 50 per cent of pure diethyl stilbestrol is achieved.

The total capital outlay for a plant capable of producing 60 kg. of the pure drug per annum is estimated at about Rs. 42,000. Equipments required are a high pressure autoclave, cooling unit, vacuum pump, heating mantles, stirrers, flasks and other common laboratory equipments.

Parties desirous of taking up the commercial development of the process may correspond with the Secretary, National Research Development Corporation, Mandi House, New Delhi.

Erratum

Para 2 of the news item, *Transistorised Community Receiver* published under the head "Process Ready for Exploitation (*CSIR News*, Vol. 10, No. 5, p. 4) should read as follows :

The cost of the hybrid (valve *cum* transistor) receiver design is less than that of the fully transistorised receiver, but slightly higher than that of the valve type of community receivers. Economics in fabrication cost are possible with suitable design. It consumes 40 per cent less battery power than the valve type receiver.

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MEETINGS

☐ A meeting of the *Advisory Committee* of the *Indian National Scientific Documentation Centre*, New Delhi will be held at the NPL, New Delhi on April 26, 1960 at 5.00 p.m. Prof. M.S. Thacker will preside.

☐ A meeting of the *Executive Council* of the *National Metallurgical Laboratory*, Jamshedpur will be held at the Laboratory on April 27, 1960 at 11.00 a.m. Shri J. J. Ghandy will preside.

PERSONAL

- Prof. M.S. Thacker, Director-General, Scientific & Industrial Research, has been nominated a member of the Court of the *Indian Institute of Science, Bangalore* for the unexpired period of the quinquennium 1956-60 *vice* Dr. A.N. Khosla.

* * *

- Shri P. B. Chakravarty has been appointed, on promotion, Senior Scientific Officer : Grade II, NML, Jamshedpur, with effect from March 23, 1960.

- Shri T. V. Prasad has been appointed, on promotion, Senior Scientific Officer : Grade II, NML, Jamshedpur, with effect from March 23, 1960.

- Shri S.R. Srinivasan has been appointed, on promotion, Junior Scientific Officer, NML, Jamshedpur, with effect from March 23, 1960.

- Shri S. M. Arora has been appointed, on promotion, Junior Scientific Officer, NML, Jamshedpur with effect from March 23, 1960.

- Shri J.K. Mukherjee has been appointed Junior Scientific Officer, NML, Jamshedpur, with effect from March 23, 1960.

* * *

- Dr. K. S. G. Doss, Director, CECRI, Karaikudi, has been renominated a CSIR representative on the *Development Council for Alkalies and Allied Industries*, Union Ministry of Commerce & Industry for a further period of 2 years.

- Dr. Y. Nayudamma, Director, CLRI, Madras, has been appointed a member of the *Board of Directors* of the *Mysore Chrome Tanning Co. Ltd.*, Bangalore, constituted by the Government of Mysore.

- The following officers have been nominated members of the Committee, Panel of the *Indian Standards Institution.*

Lt. Gen. Williams, Director (Principal Member) and Dr. N. K. Patwardhan, Asst. Director (Alternate Member), CBRI, Roorkee—*Paints and Allied Industries Products Sectional Committee.*

Dr. J.S. Aggarwal, Asst. Director (Principal Member) and Shri M.A. Sivasamban, Senior Scientific Officer (Alternate Member), RRL, Hyderabad—*Paints and Allied Industries Products Sectional Committee.*

Shri S. L. Kapur, Asst. Director, NCL, Poona—*Brushware Sectional Committee.*

Dr. M. L. Khanna, Senior Scientific Officer: Grade I, NPL, New Delhi—*Lubricants Sectional Committee.*

Dr. Nitya Nand, Senior Scientific Officer: Grade I, CDRI, Lucknow—*Fine Chemicals* (*Organic and Inorganic*) *Sectional Committee.*

Shri T. D. Bansal, Junior Scientific Officer, NPL, New Delhi—*Refractories Investigations Sub-Committee.*

* * *

- Prof. B.D. Tilak, Department of Chemical Technology, Bombay and Investigator-in-charge of the CSIR scheme, *Synthesis of heterocyclic steroids*, has been awarded the First *Basudev Banerjee Memorial Medal* by the Indian Chemical Society for his researches in *Organic Chemistry* (including *Biochemistry*).

- Shri M.S. Venkatachalapathy, Senior Scientific Assistant, CECRI, Karaikudi, has been awarded the D.Sc. (Tech.) degree by the Silesian Technical University, Gliwice, Poland for his thesis, *Studies on Electroreduction Processes with Special Reference to the Influence of Electroosmosis.*

- Shri K.P. Srivastava, Senior Scientific Assistant, CGCRI, Calcutta, has been admitted to the D. Phil. degree by the Calcutta University for his thesis, *Transport Properties of Gases.*

Shri H. V. Mirchandani

Shri H. V. Mirchandani has been appointed Asst. Director, CBRI, Roorkee, with effect from January 21, 1960.

Shri Mirchandani (*b*., Sept. 12,1925) after graduation from N.E.D. Engineering College, Karachi joined the Central Technical Power Board, Simla. Later he worked as Asst. Engineer, Damodar Valley Corporation; Asst. Garrison Engineer, Executive Engineer and Garrison Engineer, Military Engineering Service; and Instructor (Building Materials & Construction), College of Military Engineering, Kirkee.

Shri R. M. Krishnan

Shri R. M. Krishnan has been appointed, on promotion, Asst. Director, NML, Jamshedpur, with effect from March 13, 1960.

Shri Krishnan (*b*., Feb. 15, 1923) graduated from the University of Madras and took his B. Sc. (Met. Engng. from the Banaras Hindu University. After his initial training at the *Indian Iron & Steel Co.*, Kulti, he worked for about a year as metallurgist in *Textiles Machinery Corporation*, Calcutta. In 1949, he joined the NML and was later promoted as Senior Scientific Officer : Grade II and Grade I in 1954 and 1957 respectively.

He participated in the International Foundry Congress held at Italy (1954) and West Germany (1956).

In 1955, he was deputed to U. K. under the Colombo Plan for advanced studies in Foundry Technology and was awarded the Diploma of the National Foundry College.

Shri Krishnan has published several research papers and survey reports of topical value on the development of indigenous industries. He is the Editor of the *NML Technical Journal*.

Shri A.K. Moitra

Shri A.K. Moitra has been appointed, on promotion, Asst. Director, CFRI, Jealgora, with effect from March 16, 1960.

Shri Moitra (*b*., July 1915 at Purnea, Bihar) graduated in first class with Honours in Chemistry from Science College, Patna (1935) and got his M. Sc. in first division from Patna University (1937). He was associated with various educational institutions (1937-41). Coal Blending & Coking Research Sub-Committee of the CSIR (1941-43), and M/s *Andrew Yule & Company*'s Mining Technical School, Sanctoria (1943-48). In November 1948, he joined the CFRI. He had been to U.K. and the Continent for 3 months (1957-58) and visited different coal research establishments.

Shri Moitra is a member of Institute of Fuel, U.K. and Coke Oven Managers' Association, U.K.

He has to his credit a large number of research papers and is associated in the compilation of technical reports and monographs including 'Indian Coals' published by the CFRI.

BRIEFS

Conference on Building Materials

A conference of research workers on building materials was held at the *Central Building Research Institute*, Roorkee from April 11-13, 1960. Lt. Gen. H. Williams, Director, CBRI, inaugurated the conference. About forty delegates from research institutions and representatives of building industry attended the conference.

The deliberations of the conference were conducted in the following seven technical sessions: Heavy Clay Products, Cementitious Materials, Concrete, Heat & Sound Insulation, Paints & Painting, Organic Building Materials, and Dissemination of Results of Research.

Inaugurating the conference, Lt. Gen. Williams emphasized the role of building materials industry and the necessity of undertaking research in building materials to meet the demand of the Third Five-Year Plan. Discussion leaders appointed for different sessions reviewed the present state of knowledge in their respective fields and highlighted problems that still require solution.

Research Fellowships

The following have been awarded CSIR Fellowships for research in schemes noted against their names:

Senior Fellowship

SHRI S. S. RAMAN—*Studies on forest eco system* (Central Botanical Laboratory, Allahabad.)

Junior Fellowships

SARVASHRI D. N. DESHMUKH & S. C. SRIVASTAVA—*A systematic study (both fundamental and applied) of the clays and clay minerals of Madhya Pradesh with special reference to their economic suitability and a fundamental study of clay minerals associated with ore bodies* (University of Saugar, Saugar)

Research Scheme Terminated

The research scheme, *Studies in iso-oleic acids*, Dr. V. N. Patwardhan, Nutrition Research Laboratry, Hyderabad has been terminated with effect from Feb. 29, 1960.

Chemical Research Committee

The dates for receiving new research schemes and renewal applications for 1961-62 by the Council of Scientific & Industrial Research for consideration by the Chemical Research Committee are as follows:

May 31, 1960—New research schemes (for consideration at the half-yearly meeting).

Nov. 30, 1960—New research schemes and renewal applications along with Annual Progress Reports from Oct. 1, 1959 to Sept, 30, 1960 (for consideration at the annual meeting).

Research Papers

CORROSION IN THE TROPICS—K.S. Rajagopalan, CECRI, Karaikudi. *Indian Constr. News*, **8** (11) (1959), 30-33.

RAPID EXTRACTION AND SPECTROPHOTOMETRIC DETERMINATION OF URANIUM WITH THENOYLTRIFLUOROACETONE—S. M. Khopkar & A. K. De, Jadavpur University, Calcutta. *Chem. & Ind.*, (1959), 291.

EXTRACTION OF COPPER (II) WITH 2-THENOYLTRIFLUOROACETONE—S. M. Khopkar & A. K. De, Jadavpur University, Calcutta. *Z. anal Chem.*, **171** (1959), 241.

ION EXCHANGE STUDIES OF URANIUM—S. M. Khopkar & A.K. De, Jadavpur University, Calcutta. *Sci. & Cult.*, **25** (1960), 443.

CATION EXCHANGE BEHAVIOUR OF URANIUM VI ON AMBERLITE IR-120—S.M. Khopkar and A.K. De, Jadavpur University, Calcutta. *Anal. chim. Acta*, **22** (1960), 153.

CATIONIC FLOTATION OF QUARTZ, PYROLUSITE, HEMATITE, CALCITE AND GARNET—U.B. Nayak, R. Mallikarjunan & A. A. Krishnan, Indian Institute of Science, Bangalore. *Golden Jubilee Research Volume*, Indian Institute of Science, Bangalore, 1959, 270-79.

STORAGE LOSS OF SULPHUR DIOXIDE IN RIPE MANGO PULPS PRESERVED WITH BISULPHITES—A.N. Bose & S.B. Lodh, Jadavpur University, Calcutta. *J. Proc. Instn. Chem.*, **32** (1960), 9-13.

HEAT OF WETTING OF COALS—S.K. Sharma, D. Mitra, N.N. Das Gupta & A Lahiri, CFRI, Jealgora. *Coke & Gas*, **22** (1960), 5-8.

A NEW METHOD FOR ASSESSING THE HARDNESS OF COKE—S. Banerjee, K. Raja & N.N. Das Gupta, CFRI, Jealgora. *J. Mines, Metals & Fuels*, **7** (12) (1959), 1-5.

ON THE AROMATICITY OF COAL—B.N. Bose, J. Bandopadhyay, N.N. Das Gupta & A. Lahiri, CFRI, Jealgora. *Brennstoffe-Chemie*. **41** (1960), 11-14.

AMMONIATED COAL HUMUS—*Nitrogen*, U.K., **4** (Dec. 1959), 30-31.

APPLICATION OF LINEAR PROGRAMMING—P. Chakraborty, CFRI, Jealgora. *Indian Constr. News*, **8** (12) (1959), 31-35.

RESEARCH IN PROGRESS

National Laboratories

NCL, POONA

Preparation of Barium and Strontium Chemicals—Barium and strontium chemicals are usually prepared by high temperature reduction of barytes and celestite respectively by carbon or water gas.

As an alternative, a process of reduction-*cum*-chlorination in the temperature range of 500-800°C. has been studied. In laboratory experiments using 100 g. mineral and a moderate excess of chlorine (30-40% of theoretical) conversion efficiencies between 85-90 per cent have been achieved. The chlorinated residues thus obtained have been purified by extraction and crystallization. They can be converted easily to nitrates with a high degree of conversion efficiency.

NML, JAMSHEDPUR

Pig Iron from Low-Shaft Furnace—Using a burden consisting of self-fluxing briquettes made from iron ore dust (23.2%), non-coking coal (64.5%), lime stone (12.3%) and binders like sulphite lye and coal tar pitch, pig iron with the following composition: C, 2.8-3.5; Si, 3.5-5.0; S, 0.02-0.1; Mn, 0.35; and P, 0.40-0.60 per cent has been produced on the Low-Shaft Furnace.

It was difficult to operate the furnace using non-coking coal, dust iron ore or fine-grained ore and limestone due to compactness of the burden. However, commercial grade of pig iron was obtained by using lumpy iron ore (12-25 mm.), limestone powder and lumpy non-coking coal.

Vermiculite—Studies have been undertaken to purify and evaluate a vermiculite sample from Ranchi Dt. (Bihar). The sample mainly contained biotite, chlorite, lateritic clay, tremolite, actinolite and 20 per cent gangue. By drying and crushing the sample in a hammer mill to —1 in. followed by rejection of 65 mesh fines and exfoliating the following screen fractions of the concentrate : $+\frac{1}{2}$ in., $-\frac{1}{2}$ in. $+3$ mesh, $-3+20$ mesh and $-20+65$ mesh, products with bulk densities of 5.8, 6.0, 7.6 and 17.0 lb./cu. ft. respectively were obtained. These products are comparable to those which are imported and marketed in India.

CFRI, JEALGORA

Evaluation of Cambay Crudes—Investigations on the crudes from Cambay [*CSIR News*, **9** (11) (1959), 3] have been extended to determination of their composition.

Sample from well No. 1 was distilled and the fractions (13) obtained were examined for density, refractive index, viscosity, av. molecular weight, aniline point, bromine number and sulphur content; pour point and wax contents were also determined in the case of heavier fractions. The first four fractions were analysed for their chemical composition by molecular type analysis for aromatics, olefines, naphthenes and paraffins. In sharp contrast to Naharkatiya crudes, the aromatic content was low and nearly 95-97 per cent by volume (temp. up to 221°C.) consisted of saturated hydrocarbons.

Structural analysis of remaining fractions and study of ultrasonic sound velocity, surface tension and degree of branching revealed that the fractions are distinctly paraffinic in nature (72-78%). The main products of straight run distillate are : Gasoline (35°-150°C.), 10.5; kerosene, white spirit and naphtha (150°-250°C.), 14.0; diesel oil and gas oil (250°-350°C.), 19.2; lubricating oil stock, petroleum waxes and fuel oil (350°-465°C.), 17.8 per cent. It was not possible to distil more than 61.6 per cent of this crude without cracking.

The study has led to following conclusions : (i) the crude is typically paraffinic but the yield of straight run gasoline is low; (ii) the gasoline will have a low octane rating necessitating the reforming of heavy naphtha; (iii) it has a low sulphur content; (iv) the straight run kerosene has high smoke point and is of good illuminating quality; (v) the pour point of the straight run diesel oil is high and dewaxing of the components above 300°C. may be necessary; (vi) the lubricating oil stock after dewaxing will consist mostly of bicyclic naphthene with long paraffinic side-chains and will give good yield of high viscosity lubricating oils; and (vii) the short residue is not likely to contain much of the resins or asphalts, and after suitable clay treatment and dewaxing, is likely to yield high quality 'brick stock' for viscous lubricating oils.

CGCRI, CALCUTTA

Mica Paints—Investigations on use of ground mica in making paints for road marking have shown that a substantial quantity of costly pigments used in road marking paints can be replaced by mica powder without detrimental effect on its quality. Paint compositions containing mica powder have better abrasion resistance and durability than paints usually used.

CGCRI, CALCUTTA—Testing the abrasion resistance of mica paints

Paints capable of withstanding temperature upto 600°C. have also been developed using mica powder as one of the ingredients.

CDRI, LUCKNOW

Protein Hydrolysate from Oilseed Cakes—The process (Indian Pat. No. 59455) for the preparation of protein hydrolysate from oilseed cakes developed at the Institute has been successfully tried on pilot plant scale (batches of 50 lb.) in collaboration with the Processing and Engineering Divisions of the CFTRI, Mysore. Conditions for the isolation of proteins from *til* and mustard cakes without the preliminary step of solvent extraction have been standardized on the pilot plant.

The cost of production of the hydrolysate has been worked out to be about Rs. 4 per lb.

CLRI, MADRAS

Neatsfoot Oil—Investigations have been in progress for the extraction of neatsfoot oil from cattle hooves and bones by solvent extraction as also by steaming under pressure. A yield of 8-10 per cent of oil has been obtained in preliminary trials. The deoiled stock is used for the manufacture of gelatin and glue ; it is also used as manure.

Curing of Raw Hides and Skins—Hides recovered from fallen animals are not cured immediately and hence, they putrefy. Investigations have shown that swabbing them with 1 per cent sodium pentachlorophenate or zinc chloride preserves them for about 2-3 days ; later these can be cured with common salt in the usual way.

RRL, HYDERABAD

Desiccant from Gypsum—A simple process for production of normal and indicative type desiccants from gypsum has been worked out. The desiccant is neutral, inert, and non-wetting and can be easily and repeatedly regenerated. It is non-poisonous and non-corrosive. On absorption of water, it does not shrink, expand, disintegrate or develop channels in absorption columns.

The desiccant may be useful in the industrial processes of production of anhydrous liquids, drying of industrial gases and air-conditioning—M.A. Hai, Y. Venkatesham & D.S. Datar.

PATENTS & PROCESSES

Applications Filed

71190 : *Preparation of basic resinous composition suitable for use as anion-exchange resin*—N. Krishnaswamy, K.P. Govindan & B.D. Dasare, NCL, Poona.

71285 : *Improvements in the method for manufacture of acetaldehyde*—J.K. Mahendra, V.V. Deshpande & N.R. Kuloor, Shri Ram Institute for Industrial Research, Delhi.

71302 : *Improvements in electronic wattmeters for measuring high and low power*—S.S. Banerjee & A.B. Bhattacharyya, Banaras Hindu University, Varanasi.

71322 : *A process for preparation of disinfactant grade creosote oil from primary tars*—D.P. Agarwal, M.G. Krishna & S. Husain Zaheer, RRL, Hyderabad.

71333 : *Improvements in or relating to exterior house paints*—Atma Ram, S.B. Roy & H.D. Sircar, CGCRI, Calcutta.

Applications Accepted

65230 : *Improvements in or relating to hot-dip aluminizing of steel*—S.M. Arora, P.K. Gupte & B.R. Nijhawan, NML, Jamshedpur.

65610 : *Improvements in or relating to the production of chemically bonded metal clad or unclad basic refractories*—R.S. Mathur & H.V. Bhaskar Rao, NML, Jamshedpur.

65646 : *Improvements in or relating to the production of manganese metal from manganese chloride baths with special reference to the utilization of low-grade manganese ores*—V. Aravamuthan & S. Gopal, CECRI, Karaikudi.

66228 : *Improvements in or relating to wheel mounting mechanism*—C.R. Gupta & S.R. Mehra, NPL & CRRI, New Delhi.

Application Sealed in Germany

C 16460 IVa/23a : *Improvements in or relating to the preparation of costus root oil and the products thereof*—S.C. Bhattacharyya & G.R. Kelkar, NCL, Poona.

Process Ready for Exploitation

Black Board Paint

The *National Chemical Laboratory*, Poona has developed a black paint composition for making black boards. The composition, based on indigenous materials, can be coated on wood, metal and hard board. It gives the desired surface on which one can write clearly with a chalk and easily rub off the writing.

Parties interested in the commercial exploitation of the product may correspond with the Director, National Chemical Laboratory, Poona.

Process Leased Out

The process (Indian Pat. No. 58756) for the manufacture of *Maleic Anhydride from Benzene* developed by the Shri Ram Institute for Industrial Research, Delhi under a CSIR scheme has been leased for commercial development to *R. Nandlal & Co.*, Bombay.

COAL CARBONIZATION

Proceedings of the symposium held at the Central Fuel Research Institute during March 19-24, 1957. Containing 65 papers (with discussions) from eminent scientists and technologists from India and abroad.

Pp. 377 ; Demy 4to; Price : **Rs. 20.00**

Copies available from :

1. The Director, Central Fuel Research Institute, Jealgora.
2. The Editor, Journal of Mines, Metals & Fuels, 6/2, Madan Street, Calcutta-13.

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MEETINGS

☐ A meeting of the *Advisory Committee* of the *Central Scientific Instruments Organisation*, New Delhi will be held at the NPL, New Delhi on May 18, 1960 at 10.0 a.m. Dr. B. D. Kalelkar will preside.

☐ A meeting of the *Essential Oils Research Committee* will be held at the Indian Institute of Science, Bangalore, on May 23, 1960 at 10.30 a.m. Shri P. A. Narielwala will preside.

Prof. M.S. Thacker

Prof. M. S. Thacker, Director-General, Scientific & Industrial Research left for Paris on April 30, 1960 to attend the meeting of the Research Advisory Committee on Natural Science Programme of UNESCO. Prof. Thacker also participated in a symposium on *What the Common wealth Means in Practice* arranged by the English Speaking Union of the Commonwealth at London. The subject of his paper in the symposium was *Scientific and Technological Liaison between the Member Nations and Peoples of the Commonwealth.* Prof. Thacker returned to New Delhi on May 14, 1960.

PERSONAL

●**Dr. Anil Kumar Ghosh** has been appointed Senior Scientific Officer : Grade I, CMRS, Dhanbad, with effect from Dec. 18, 1959.

●**Dr. T.H. Shama Rau** has been appointed, on promotion, Senior Scientific Officer : Grade II (Information), CDRI, Lucknow, with effect from Jan. 28, 1960.

●**Shri D.P. Dutta** has been appointed, on promotion, Senior Scientific Officer : Grade II, CMRS, Dhanbad, with effect from March 3, 1960.

●**Shri K.M. Kaiser** has been appointed, on promotion, Senior Scientific Officer : Grade II, CMRS, Dhanbad, with effect from March 3, 1960.

●**Shri T.S. Kumar** has been appointed, on promotion, Junior Scientific Officer, CMRS, Dhanbad, with effect from March 3, 1960.

●**Shri H. Ali** has been appointed, on promotion, Junior Scientific Officer, CMRS, Dhanbad, with effect from March 3, 1960.

●**Dr. A.K. Sen** has joined CDRI, Lucknow, as Pool Officer with effect from April 14, 1960.

●**Dr. S.A. Saletore**, Deputy Director, RRL, Hyderabad, has been looking after the duties of the Director, RRL in the absence abroad on leave (till July 2, 1960) of Dr. S. Husain Zaheer.

Seminar

Castor Seed and its Products

A seminar on Castor seed and its Products will be held at the *Regional Research Laboratory,* Hyderabad, sometime in July 1960.

A detailed questionnaire covering all aspects of castor seed processing, quality and standards, prices and utilization of castor oil and by-products has been framed and sent to research and technological institutions and industrial organisations for eliciting replies so that they may provide a fruitful basis for discussion during the seminar.

The last date for receipt of replies to the questionnaire by the Director, Regional Research Laboratory, Hyderabad is May 31, 1960.

●**Prof. S.R. Mehra**, Director, CRRI, New Delhi, left for Paris on May 9, 1960 to attend a symposium on *Arid Zone Problems* (May 12-18, 1960) organized by the Unesco Advisory Committee on Arid Zone.

●**Dr. L.A. Ramdas**, Asst. Director, NPL, New Delhi, left for Paris on May 7, 1960 to attend the 16th Session of the Advisory Committee on Arid Zone and a symposium on Arid Zone Problems.

●**Shri S. Ranga Raja Rao**, Asst. Editor, Publications Directorate, New Delhi, left for U.K. on April 27, 1960 for training in *Methods of collection, retrieval and processing of scientific information*, under the Colombo Plan.

●**Dr. J.N. Karkun**, Senior Scientific Officer, CDRI, Lucknow, who had been to Cardiff under the Colombo Plan resumed duty. He carried out researches on the Separation of ∝ and β—constituents of M.S.H. hormone and the melanocyte stimulating substance in blood under Prof. F.W. Londgrebe at Welsh National School of Medicine.

* * *

●**Dr. B.R. Nijhawan**, Director, NML, Jamshedpur, has been re-elected President of the *Institute of Indian Foundryman*. He has also been re-elected Vice-Chairman of the *Structural and Metals Division Council* of the Indian Standards Institution.

●**Dr. A. Lahiri**, Director, CFRI, Jealgora, has been nominated a member of the Advisory Committee for *Power Research in India* constituted by the Central Board of Irrigation and Power.

●**Dr. Y. Nayudamma**, Director, CLRI, Madras, has been nominated Chairman of the *Board of Visitors* constituted by the Government of Madras to suggest improved and advanced methods of training at the *Institute of Leather Technology*, Madras.

●**Shri N.V. Modak**, Director, CPHERI, Nagpur, has been nominated Convenor of the Expert Committee for *Effluent Treatment Plant* constituted by the Heavy Electricals Ltd., Bhopal.

●**Dr. K S.G. Doss**, Director, CECRI, Karaikudi, has been nominated a member of the Expert Committee for *Effluent Treatment Plant*, Heavy Electricals Ltd., Bhopal.

(*Contd. on p. 2, col. 3*)

BRIEFS

Nature of Coal

The proceedings of the symposium on Nature of Coal held at the *Central Fuel Research Institute*, Jealgora in February 1959 have been published.

The 321-page publication includes 40 papers presented and discussed at the symposium by scientists from India and abroad (U.S.S.R., U.K., Canada, East Germany, West Germany, Czechoslovakia, Yugoslavia, Belgium, New Zealand, Australia, and Japan). The publication is divided into the following sections : (i) Origin and Systematics of Coal; (ii) Petrographic and X-ray Studies on Coal; (iii) Ultrafine Structure of Coal; (iv) Coal Constitution—physical methods; (v) Coal Constitution—chemical methods ; and (vi) Physico-chemical Properties of Coal.

Copies of the publication (price Rs. 25) are available from the Director, Central Fuel Research Institute, Jealgora.

Seminar on Electrochemistry

The three-day seminar on Electrochemistry organised by the *Central Electrochemical Research Institute*, Karaikudi ended on April 25, 1960.

More than 60 papers pertaining to the fundamental and applied aspects of electrochemistry received from scientists and technologists in India and abroad were presented and discussed in the following six technical sessions : Electrode-Kinetics and Polarography ; Electrolytic Preparations ; Metal Finishing and Growth of Electro-deposits; Electrolytic Equilibria;Corrosion; Experimental Techniques and Miscellaneous. The sessions were presided over by Prof. S. N. Bagchi, University College of Science, Calcutta; Dr. Anjaneyulu, Defence Metallurgical Laboratory, Ishapur; Prof. M. A. V. Devanathan, University of Ceylon, Colombo ; Prof. K. S. G. Doss, Director, CECRI, Karaikudi; Dr. J. P. Kapur, DCM Chemicals Works, Delhi ; and Shri P. K. Seshan, Development Wing, Union Ministry of Commerce & Industry.

Other papers dealt with subjects such as electrodialysis, electrophoresis, thermodynamics of irreversible electrochemical processes, polyelectrolytes, electrochemistry of non-aqueous solutions and electrochemistry of colloids.

Special full-day discussions were held in supplementary meetings arranged on the two days following the seminar on (i) Electric double layer and (ii) Application of statistical mechanics for obtaining the thermodynamic properties of concentrated solutions of strong electrolytes. Shri P. K. Seshan delivered an evening lecture on 'Electrochemical Industries in India—Present and Future.'

RRL, Hyderabad

The *Regional Research Laboratory*, Hyderabad has been recognised as a Research Centre for conducting research for post-graduate degrees in science and technology by the following universities : Andhra, Aligarh, Annamalai. Banaras, Baroda, Calcutta, Gujrat, Kerala, Madras, Osmania, Poona and Utkal, and the Indian Institute of Science, Bangalore.

BITM, Calcutta

The first anniversary of the Birla Industrial & Technological Museum, Calcutta was celebrated on May 2, 1960. Prof. S. N. Bose, National Professor, delivered a lecture on "Message of Science."

Two models of Schloemann 'Rolling Mill' received as present from *M/s. Voltas Limited* were added to Metallurgy gallery of the Museum.

* * *

DR. B. MUKERJI, Director, CDRI, Lucknow delivered on March 27, 1960 the First Annual Lecture of the *Scientific Research Committee*, Uttar Pradesh on *Development of Researches on Indian Medicinal Plants.*

An honorarium of Rs. 1,000 was awarded to him at the occasion.

* * *

The Director-General, Scientific & Industrial Research has been pleased to accept the resignation of the following Senior Research Fellow :

SHRI S. H. IBRAHIM—*Pilot plant production of ethylene oxide* (Shri Ram Institute for Industrial Research Delhi).

PERSONAL

(*Contd. from p. 1, col. 3*)

●SHRI M. KRISHNAN, Senior Research Fellow (Scheme : Development of polyesters suitable for adhesives, etc, Shri Ram Institute for Industrial Research, Delhi) has been awarded Ph.D. degree by the Madras University for his thesis : *Synthesis of Analogues of Natural Products—Synthesis of Heterocyclic Compounds Containing Nitrogen.*

Dr. S.C. Agarwala

Dr. S. C. Agarwala has been appointed, on promotion, Asst. Director, CDRI, Lucknow, with effect from March 8, 1960.

Dr. Agarwala (*b.* November 1922), M.Sc. (Allahabad, 1944), Ph. D. (Wisconsin, 1949), joined CDRI, Lucknow as Junior Scientific Officer in 1951. In 1958 he was deputed to Tokyo for training in radio-isotopes. His researches are mainly connected with the organisation and function in biological systems at the molecular and macromolecular levels and medical biochemistry.

Dr. Agarwala has published more than 40 papers in the field of biochemistry and biophysics.

Dr. A.B. Kar

Dr. A.B. Kar has been appointed, on promotion, Asst. Director, CDRI, Lucknow, with effect from March 8, 1960.

Dr. Kar (*b.* May 6, 1918) M. Sc. (Calcutta, 1940) Ph. D. (Edinburgh, 1946), Resident Doctor in Endocrinology (Cornell, Ithaca, 1946-47), Senior Research Fellow, National Institute of Sciences of India at the Central Drugs Laboratory, Calcutta (1949-52), joined CDRI, Lucknow as Senior Scientific Officer in 1952. He was deputed under the Colombo Plan to Universities of Birmingham and London (1955). He is a member of : Editorial Board, *Annals of Biochemistry & Experimental Medicine, Calcutta* ; Indian Pharmacopoeia Committee (Vitamin, Hormone & Antibiotics). He is a Joint Officer-in-charge of research projects sponsored by the Union Ministry of Health and Indian Council of Agricultural Research.

Dr. Kar has published more than 100 papers on interaction of hormones and endocrinology of reproduction.

RESEARCH IN PROGRESS

National Laboratories

NML, JAMSHEDPUR

Metallurgical Coke from Raniganj and Jharia Coals—Carbonization tests with different blends of Raniganj and Jharia coals have shown that coke possessing all the specifications of metallurgical grade coke (except for slightly higher Micum Index through 10 mm.) can be produced from the following blends: (i) Non-coking Rana seam (Raniganj) 10 per cent and XII/XIII seam Jharia coal and (ii) low volatile Damgoria (Raniganj) seam 30-60 per cent and high & medium volatile Raniganj (Dishergarh and Chanch-Laikdih) coals.

CGCRI, CALCUTTA

Goggle Glass for Welders—Glasses used as goggles and filters in gas and electric welding operations are entirely imported. Investigations were undertaken to examine the possibility of producing such glasses in India.

The effect of various oxides on colourisation of glasses and the absorption properties of the glasses in ultra-violet, visible and infra-red light have been investigated. Compositions for light as well as dark glasses for welding operations conforming to standard specifications have been developed by a proper adjustment of the proportions of the colourants.

CDRI, LUCKNOW

Stability of Vitamins—Investigations on the stability of vitamins in pharmaceutical preparations have been continued [*CSIR News*, 10 (5) (1960), 3].

The following base combinations have been found to retain 70 per cent vitamin A, 73 per cent vitamin B_1 and 51 per cent vitamin C after 5 months' storage: Sorbitol : Propylene glycol : glycerol: ethyl alcohol (2:1:1:1); syrup : glycerol : water (2:2:1) and syrup : glycerol (1:1).

Vitamin A is very unstable in presence of vitamin B_1 at *p*H 6.0. Vitamin B_1 deteriorates rapidly in presence of ascorbic acid.

Colourisation of Vanaspati—Toxicity studies on *Ratanjot* (*Onosma echioides* Linn.) root dye using rats as experimental animals have been carried out with a view to establish its suitability for colourisation of vanaspati.

Toxicity studies with the dye revealed no untoward effect. In chronic toxicity the histopathological examination of liver showed the incidence of fatty infiltration in some animals of the experimental groups as well as in one case of the control group. Evidence of gross pathological changes in other organs was absent.

NBG, LUCKNOW

Pollen Herbarium—Pollen slides of a large number of Indian plants have been prepared to establish a "Pollen Herbarium" in the Palynology Laboratory. Of the 1395 slides prepared so far, 350 are of cultivated plants of economic importance, 95 of Indian medicinal plants, and rest are mainly of plants of the Himalayan region. An automatic pollen collector has been fabricated to facilitate the atmospheric pollen survey of the country proposed to be undertaken by the Laboratory.

Sponsored Research

Furfuryl Alcohol and its Products—A continuous process for the production of furfuryl alcohol by vapour phase catalytic hydrogenation of furfural has been successfully worked out on a pilot plant (capacity 2 lb/hr.). The process consists in passing a preheated mixture of furfural and hydrogen (molar ratio, 1:30) through a bed of copper chromite catalyst supported on a suitable mesh size of an inert carrier (pumice) maintained in a vertical tubular reactor at 140°C. A product of 90 per cent purity has been obtained in an over-all yield of 85—90 per cent. Quantitative conversions of furfural have been achieved in experiments employing a fluidised bed of copper chromite for hydrogenation. The salient features of the process are covered by Indian Pat. No. 64353.

The polymerisation of furfuryl alcohol under the influence of various acids as catalysts has been studied and methods have been worked out to manufacture a reactive storage stable polymer of furfuryl alcohol suitable for preparing adhesives, laminating agents and moulding powders.

A phenol-formaldehyde resin modified with a substantial amount of furfuryl alcohol polymer suitable for use as a bonding agent for abrasive articles, such as grinding wheels, sand papers, etc. has been prepared. Two patents (Indian Pat. Nos. 66886 & 69250) incorporating the novel features of the process have been filed—R. T. THAMPY, V. NAGARAJAN & (Mrs.) K. KATHPALIA, Shri Ram Institute for Industrial Research, Delhi.

Pilot plant for furfuryl alcohol—Shri Ram Institute for Industrial Research, Delhi

Air Speed Indicator — Construction of two different types of indicator displacement mechanisms have been completed at the Madras Institute of Technology. One of these is the conventional sector pinion mechanism in which the magnification and response characteristics are adjustable within certain limits. In the second type of mechanism which makes use of a simple screw with fixed magnification, the number of components is reduced considerably and thus simplification is achieved. These mechanisms besides being useful in the construction of air speed indicators can be used as a general displacement indicator. For extreme precision study the Be-Cu bush bearings in the mechanism are replaced with jewel bearings. The mechanisms can find application in the construction of dial indicators and other similar mechanisms—I. RAMAKRISHNA RAO, Madras Institute of Technology, Chromepet.

Research Papers

ROLE OF QUERCETIN IN BIOSYNTHESIS OF ASCORBIC ACID—(Miss) B. Puri, Lady Irwin College, New Delhi. *Indian J. Physiol.*, **13** (1959), 136-42.

BIOFLAVONOIDS FROM INDIAN VEGETABLES AND FRUITS—(Miss) K. Ganju & (Miss) B. Puri, Lady Irwin College, New Delhi. *Indian J. med. Res.*, **47** (1959), 563-70.

THENOYLTRIFLUOROACETONE AS A COLORIMETRIC REAGENT—S. M. Khopkar & A. K. De, Jadavpur University, Calcutta. *Chem. & Ind.*, (1959) 854.

CLEOME MONOPHYLLA LINN : A NEW RECORD FOR UPPER GANGETIC PLAIN—S.L. Kapoor & G. S. Srivastava, NBG, Lucknow. *Sci & Cult*, **25** (1960), 532.

TULIPS CAN GROW IN THE PLAINS—G. S. Srivastava, NBG, Lucknow. *Indian J. Hort.*, **4** (1959), 23.

SYNTHETIC STUDIES OF TERPENOIDS - PART IV—S.L. Mukherjee & P.C. Dutta, Indian Association for the Cultivation of Science, Calcutta. *J. chem. Soc.*, (1960), 67.

PATENTS & PROCESSES

Applications Filed

71092 : *A process for the manufacture of citric acid*—M. R. R. Raghavendra Rao & J.R. Vakil, NCL, Poona.

71467 : *Improvements in or relating to traffic paints*—Atma Ram, S.B. Roy & H.D. Sircar, CGCRI, Calcutta.

Applications Accepted

65138 : *Improvements in or relating to the manufacture of garlic powder*—J.S. Pruthi, G. Lal & V. Subrahmanyan, CFTRI, Mysore.

65777 : *A new process for the production of 4-hydroxycarbostyrils*—V.R. Shah, J.L. Bose & R.C. Shah, NCL, Poona.

65779 : *A process for the production of hydrogen sulphide from gypsum*—(Miss) Razia Osmani, D.S. Datar & S. Husain Zaheer, RRL, Hyderabad.

65977 : *Rubber-base adhesive*—Uma Shankar, NCL, Poona.

Applications Sealed

62352 : *Refractory compositions comprising graphite and aluminosilicate materials and glazes to render such compositions resistant to oxidation*—T.V. Prasad & H.P. Srinivasamurthy, NML, Jamshedpur.

63865 : *A tensioning screw jack*—G.S. Ramaswamy & S.K. Narayana, CBRI, Roorkee.

Processes Ready for Exploitation

CATION EXCHANGE RESIN

The *National Chemical Laboratory*, Poona has developed a cation exchange resin (of sulphonated phenolic type) from cashewnut shell liquid which can be used both in the sodium form and hydrogen form. In sodium form it can be used in place of zeolites for softening water for boilers and air conditioning units provided the chlorine content in water is less than 0.1 ppm. In the hydrogen form it can be used in combination with anion-exchange resins for demineralisation of solutions. Economics of the manufacturing process has been studied on a pilot plant capable of handling 75 lb. of cashewnut shell liquid per batch.

The performance of the resin has been studied for fifty cycles and no reduction in capacity has been observed.

The equipment and accessories required for production are simple and can be easily fabricated.

Parties desirous of taking up the manufacture of the resin are invited to correspond with the Secretary, National Research Development Corporation, Mandi House, New Delhi-1.

PRESTRESSING SCREW JACK

A light and portable prestressing jack for use in the construction of prestressed concrete elements has been designed by the *Central Building Research Institute*, Roorkee. The manually operated jack works on screw principle and can replace the conventional two wire jacks at present imported. It is simple in operation and fabrication.

A prototype made from mild steel has been tested with satisfactory performance. It has a capacity of 5 tons and can tension at a time one wire of 7 mm. or two wires of 5 mm. thickness.

Anchorage grips for use with the jack have also been designed.

Parties desirous of undertaking the commercial development of the jack are invited to correspond with the Secretary, National Research Development Corporation, Mandi House, New Delhi-1.

NATURE OF COAL

Proceedings of the symposium held at the Central Fuel Research Institute, during February 1959

Pp. 321 **Price : Rs. 25.00**

Copies available from :

The Director, Central Fuel Research Institute, Jealgora

Printed at Asia Press, Delhi-7 and Published by the Council of Scientific & Industrial Research, Old Mill Road, New Delhi-1.

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CSIR NEWS

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MYSORE

SYMPOSIUM ON PROTEINS

A two-day symposium on Proteins will be held at the Central Food Technological Research Institute, Mysore during the first week of August 1960. The symposium, sponsored by the Chemical Research Committee of the CSIR, will cover the following aspects :

(1) Structure

(2) Chemistry and Methodology

(3) Biochemistry : Biosynthesis metabolism and inter-relationship and immunochemistry

(4) Nutritive Value : Amino acid composition and evaluation of protein quality

(5) Technology : Production of amino acids, protein isolates, protein hydrolysates, and protein-rich foods

(6) Proteins in Human Nutrition : Prevention and treatment of protein malnutrition and proteins in therapy

(7) Industrial Uses : Adhesives, distempers, fibres, fillers, etc.

Those who wish to contribute papers and participate in the symposium are requested to send their contributions along with abstracts (*c.* 300 words each) to Dr. A. Srinivasan, Deputy Director, Central Food Technological Research Institute, Mysore, before **June 15, 1960.**

Participants are invited to exhibit during the symposium samples of experimental preparations and food, pharmaceutical and industrial products based on protein.

Directors' Conference

A two-day conference of the Directors of National Laboratories will commence at the National Chemical Laboratory, Poona on June 10, 1960. Prof. M.S. Thacker, Director-General, Scientific & Industrial Research, will preside.

RRL MEETING

A meeting of the *Executive Council* of the *Regional Research Laboratory, Jammu* will be held on June 4, 1960, at Srinagar. Bakshi Gulam Mohammed, Prime Minister of Jammu & Kashmir, will preside.

PERSONAL

● Shri S. Ramachandra has been appointed Senior Scientific Officer : Grade I, CMRS, Dhanbad, with effect from May 2, 1960.

● Shri Ajoy Kumar Ghose has been appointed as Senior Scientific Officer : Grade I, CMRS, Dhanbad, with effect from May 3, 1960.

● Shri H. N. Anand has been appointed Senior Scientific Officer : Grade II, CBRI, Roorkee, with effect from Jan. 8, 1960.

● Shri B.P. Amina has been appointed Civil Engineer, CBRI, Roorkee, with effect from Jan. 23, 1960.

● Shri M. Sundaram has been appointed, on promotion, Junior Scientific Officer, CECRI, Karaikudi with effect from April 25, 1960.

● Dr. S. Sundaram has joined CMERI, Durgapur, as Pool Officer, with effect from April 15, 1960.

* * *

● The following have been nominated members of the Committee constituted by the Union Ministry of Food and Agriculture for *Coordinating the Researches on Colourisation of Vanaspati* :

(1) Dr. B. Mukerji, Director, CDRI, Lucknow

(2) Dr. V. Subrahmanyan, Director, CFTRI, Mysore

(3) Dr. K. Venkataraman, Director, NCL, Poona

● Dr. B. Mukerji, Director, CDRI, Lucknow, has been nominated a member of the Scientific Advisory Board of the *Indian Council of Medical Research* for 3 years with effect from April 1, 1960.

● Dr. S. Husain Zaheer has been nominated a Director of the Board of Management of the *Mining and Mineral Products Corporation, Government of Jammu & Kashmir.* He has also been nominated a member of the Coordination Committee on *Industries in Andhra Pradesh.*

● Dr. V. Subrahmanyan, Director, CFTRI, Mysore, has been nominated Chairman of the *Technological Sub-Committee* of the *Indian Central Coconut Committee.*

● Dr. Y. Nayudamma, Director, CLRI, Madras, has been nominated a member of the Study Group on *Tanning and Leather Industry in Villages and Small Sector,* sponsored by the Village and Small Industries Division, Planning Commission.

● Dr. H. A. B. Parpia, Officer-on-Special Duty (Extension), CSIR, has been nominated a member of the *Foodstuffs Sub-Committee* of the Defence Production and Supply Committee constituted by the Ministry of Defence.

● Dr. S. K. Barat, Asst. Director, CLRI, Madras, has been elected a Reporter to the *International Sampling Commission for Vegetable Tanning Materials and Extracts* appointed by the International Union of Leather Chemists Societies.

● Dr. G. M. Vyas, Senior Scientific, Officer, NCL, Poona, has been nominated a CSIR representative on the *Technological Research Sub-Committee* of the *Indian Central Cotton Committee.*

● Dr. Amarjit Singh, Asst. Director-in-charge, CEERI, Pilani, has been nominated a member of the *Panel for Electronics and Wireless Equipment Industry*, Union Ministry of Commerce and Industry.

● The following officers have been nominated members of Committees Panels of the *Indian Standards Institution* :

(*Contd. on p. 2 col. 3*)

BRIEFS

Kinetics of Electrode Processes and Null Points of Metals

This 94-page book, just published, comprises a series of lectures delivered by Prof. L. I. Antropov at the Central Electrochemical Research Institute, Karaikudi, during January 1958. They present the theory of electrode processes in a form which would be helpful in dealing with electrochemical problems of practical interest.

The essence of Professor Antropov's point of view is that the electrical charge on an electrode surface and the structure of the electrical double layer play a crucial role in electrode processes.

The book is divided into five chapters. The first two deal with scale of electrode potentials (which is a measure of the charge on the electrode) and the mechanism of hydrogen overpotential. The fundamental ideas, developed in these two chapters, provide a fresh approach to three important fields of applied electrochemistry, namely, metal deposition, electro-organic reductions and corrosion of metals —and these are discussed in the remaining three chapters.

Copies of the publication (Price Rs. 5) are available from the Under Secretary, Publications Directorate, CSIR, New Delhi.

Oil of Eucalyptus citriodora

The scope for the production of oil of *E. citriodora* in India has been indicated in a 8-page leaflet, issued by CSIR (*Oil of* Eucalyptus citriodora—*Scope of its development in India* by B. C. Gulati : Survey of Indian Essential Oils, Leaflet No. 2, 1960). The oil is derived from the leaves and terminal branchlets of the tree, commonly known as Citron-scented gum or Lemon-scented gum. *E. citriodora* is cultivated in some parts of India and exploited on a limited scale for perfumery purposes. The CSIR Essential Oils Research Committee has initiated a research scheme on the systematic cultivation of *E. citriodora* at Ootacamund.

Copies of the publication are available from the Under Secretary, Publications Directorate, CSIR, New Delhi-1.

Research Fellows

The following have been awarded *CSIR Fellowships* for research on projects noted against their names :

Senior Fellowships

1. Shri B. K. Saxena—*Determination of specific heats of raw materials for the blast furnace* (Banaras Hindu University, Varanasi).
2. Shri Maheswar Sharma—*Synthetic studies in diterpenoids acid* (Indian Association for the Cultivation of Science, Calcutta).
3. Shri T. C. Paul—*Cavitation studies on various kinds of hydraulic turbines* (Irrigation and Power Research Institute, Amritsar).
4. Shri Arvindakshan—*The role of enzymes in toxic action of venoms* (Indian Cancer Research Centre, Bombay).
5. Dr. (Miss) Jharan Ghosh—*Studies on cell metabolism* (University College of Science and Technology, Calcutta).

Junior Fellowships

1. Shri R. N. Raizada—*Morphology, histo-chemistry and life history of Cestode parasites of animals of Delhi* (Delhi University, Delhi).
2. Shri Nirmalendu Moitra—*Non-aqueous acid-base titration* (Jadavpur University, Calcutta).
3. Shri R.S. Bandyopadhyay—*Physico-chemical studies on Indian silk* (University College of Science and Technology, Calcutta).
4. Shri G. C. Banerjee—*Synthetic studies in triterpenoids* (Indian Association for the Cultivation of Science, Calcutta).
5. Shri J. P. Srivastava—*Selection of stone aggregate* (Public Works Department, Uttar Pradesh, Lucknow).
6. Kumari Dipali Bhattacharyya—*Metabolic disorders in brain in vitamin deficiencies* (University College of Science & Technology, Calcutta).

The resignation of the following Research Fellows has been accepted:

Senior Fellow

Shri M. L. Bhaskara Rao—*Absolute values of rate constant in polymerization*, Indian Association for the Cultivation of Science, Calcutta (w.e.f. April 30, 1960).

Junior Fellows

Shri I.G. Vasi—*Optical reaction of synthetic and natural products*, Gujrat University, Ahmedabad (June 1, 1960).

Dr. A. P. Khatri—*Exploration for the remains of early man*, Panjab University, Chandigarh.

PERSONAL

(*Contd. from p. 1, col. 3*)

Shri H.V. Mirchandani, Asst. Director, CBRI, Roorkee—*Planning and Organisation at Site Sectional Committee.*

Dr. Uma Shanker, Senior Scientific officer, NCL, Poona—*Panel for Studying Document.*

Dr. Girdhari Lal, Asst. Director, (Principal Member) and Dr. G.S. Siddappa, Senior Scientific Officer (Alternate Member), CFTRI, Mysore—*Fruits and Vegetables Sectional Committee*

Dr. J.S. Aggarwal, Asst. Director, RRL, Hyderabad—*Lubricants Sectional Committee.*

Shri K.C. Govel, Engineer Officer, CSIR, New Delhi—*Terminology Notations and Drawing Sectional Committee.*

Shri J.B. Rao, Junior Scientific Officer, CLRI, Madras—*Heavy Leather Sub-Committee.*

* * *

● Dr. H.L. Uppal, Investigator-in-charge of CSIR scheme and Director, Irrigation and Power Research Institute, Amritsar has been awarded the D.Sc. degree by the Panjab University for his work in *Hydraulics and other problems related to irrigation and agriculture.*

● Shri Soumyendralal Mukherjee Senior Research Fellow (CSIR scheme, *Synthetic studies in diterpenoid resin acids*, Indian Association for the Cultivation of Science, Calcutta) has been awarded the D. Phil. degree by the Calcutta University for his thesis, *Synthetic Investigations of Resin Acids.*

● Shri Hardev Singh, Junior Research Assistant (Scheme : *Morphological and embryological studies on some Indian Gymnosperms*, Delhi University, Delhi) has been awarded the Ph.D. degree by the University of Delhi for his thesis : *Morphological studies on* Cephalotaxus drupacea *Sieb et. Zucc.*

RESEARCH IN PROGRESS

National Laboratories

NPL, NEW DELHI

High Atmosphere—A self consistent model of the earths' high atmosphere (range, 130-1,000 km.) has been developed from the study of drag data of Russian and American Satellites. The density of the atmosphere is derived from an analysis of surface observations of changes in the satellite period of rotation (which is a direct result of the drag and is a function of the atmospheric density at or near the perigee of the satellite), temperature and composition of air at that height, dimensions of the satellite and the characteristics of the orbit. The concentrations of individual constituents of the atmosphere and distribution of air temperature were also deduced from the above data.

The atmospheric density has been found to be considerably higher than that in the Rocket Panel model or model given by the U. S. Air Research and Development Command. At 130 km., the total particle concentration of the atmosphere is 7.3×10^{10} cm.$^{-3}$ with atomic oxygen (O), oxygen (O_2) and nitrogen (N_2) in the ratio of 1:1.4:1. The concentrations of O_2 and N_2 drop off more rapidly with height than the concentration of atomic oxygen, so that the air begins to consist more and more of atomic oxygen as we go up and at 300 km. atomic oxygen accounts for 95 per cent of the total air. Above this height the air, for all practical purposes, contains atomic oxygen only. The concentrations of atomic oxygen at 300, 500 and 1,000 km. are 1.7×10^9, 5.8×10^7 and 3.8×10^5 cm.$^{-3}$ respectively. The total particle concentration on the ground is about 2.6×10^{19} cm.$^{-3}$.

It has been found that the high atmosphere is extremely hot; temperature rises from *c.* 460°K at 130 km. to *c.* 2,000°K at 600 km. and remains 2,000°K above this height. The critical level at which the earth's atmosphere merges with interstellar space is about 550 km.

NCL, POONA

Synthetic Cryolite from Fluorspar—The preparation of aluminium-grade cryolite from siliceous fluorspar deposits of Madhya Pradesh has been studied using the alkali fusion and fluorosulphate methods.

Up to 80-85 per cent fluorine can be extracted from fluorspar by alkali fusion (40 per cent excess alkali) in the presence of powdered ilmenite. Leaching in stages minimizes silica contamination in the fluoride extract; complete desilication is achieved by zinc oxide treatment. Cryolite of proper crystalline structure and purity is obtained by reacting silica-free fluoride solution with sodium aluminate solution.

It is also possible to solubilize 75-80 per cent of fluorine as alumino-fluorosulphate complex from fluorspar, but the cryolite obtained from the complex solution contains large amounts of alumina, rendering it unsuitable for commercial use.

NML, JAMSHEDPUR

Magnesium from Dolomite—A small unit capable of producing 1 lb. of magnesium from dolomite has been set up. Studies are being carried out to design a condenser for large scale trials.

CECRI, KARAIKUDI

Preparation of Perchlorates—In the electrolytic preparation of perchlorate from chlorate, lead dioxide anodes (lead dioxide deposited on graphite or carbon base material) can replace the expensive platinum anodes both under acidic and alkaline conditions. Optimum conditions for electrolysis have been worked out.

Besides sodium fluoride which is reported to increase current efficiency, it has been observed that addition, during electrolysis, of sulphuric acid instead of hydrochloric acid, for maintaining acidic condition (*p*H, 6.4-6.8) increases current efficiency with or without addition of sodium fluoride.

Other conclusions arrived at as a result of the investigation are: (i) Under alkaline conditions of electrolysis, addition of sulphate has a detrimental effect on current efficiency; a wide range of temperature, current density and current concentration conditions can be employed without appreciably affecting the efficiency; (ii) under acidic conditions, optimum temperature has to be maintained to obtain the desired results; (iii) fresh anodes give lower current efficiency than used anodes and; (iv) the cumulative current efficiency of perchlorate formation decreases with duration of electrolysis to a greater extent under acidic than under alkaline conditions—K. C. NARASIMHAN & H.V.K. UDUPA.

RRL, HYDERABAD

Removal of Silica from Black Liquor—The presence of soluble silica (4 g./l. of SiO_2) in black liquor obtained after digestion of bamboo with alkalies in paper mills, creates difficulties both in the operation of evaporators, where black liquor is concentrated, and also in the furnace where the liquor is burnt to recover alkalies. During causticization, silica precipitates as calcium silicate along with calcium carbonate, rendering the carbonate unfit for reuse.

A simple process for the removal of silica (up to 95 per cent) from black liquor without affecting its calorific value has been worked out.

Based on the process, a pilot plant for processing 5,000 gal. of black liquor per day has been designed. The plant is being installed by a private firm—A.V. RAJESHWAR RAO, Y. VENKATESHAM, D.S. DATAR & S. H. ZAHEER.

Sponsored Research

Enzyme Reaction in Experimental Diabetes—The effect of injecting dehydro-ascorbic acid in white albino rats on serum alkaline phosphatase activity has been studied. The enzyme activity increases in diabetic animals. The rise in activity is also related to the rise in blood sugar level. However, the effect is not so pronounced as in the case of alloxan diabetic animals.

The effect of sodium aceto-acetate upon the phosphorylating enzymes has also been studied. It is observed that sodium aceto-acetate exhibits an inhibitory effect upon hexokinase activity and consequently upon phosphorylation. The inhibitory effect of sodium aceto-acetate is counteracted by insulin added in the media;

4 international units of insulin in the experimental medium were sufficient to check the inhibitory effect of 10 mg. of sodium aceto-acetate—M. C. NATH & D. B. MOTLAG, Nagpur University, Nagpur.

Respiratory Activity of Germinating Rice Embryo—The respiration rates of excised rice seedlings at different stages of germination with sucrose and indole acetic acid solutions have been determined in relation to the auxin content of embryo and endosperm. It has been observed that the respiration rates are higher when sucrose solution is used in combination with indole acetic acid solution than in auxin solution alone. After 48 hr of soaking in stages the respiration rates with different concentrations (10.0, 1.0, 0.1, 0.001 and 0.0001 mg./l.) of indole acetic acid and sucrose solution (2 per cent) are even greater than the rates in sucrose solution. In indole acetic acid solution alone respiration rate is lower—S.M. SIRCAR & (MISS) P.D. ROY, Calcutta University, Calcutta.

Research Papers

RELATION BETWEEN THE COMPRESSIVE STRENGTH OF CONCRETE AND ITS ELASTIC MODULUS—G. S. Ramaswamy, B.L. Gupta & M.R. Sharma CBRI, Roorkee. *Indian Concr. J.*, **34** (1960), 92-94.

INVESTIGATIONS ON MILD STEEL DEFORMED BARS—M. R. Parthasarathy & B. L. Gupta, CBRI, Roorkee. *J. nat. Buld. Org.*, **4** (3) (1959), 19-29.

DARK COLOUR OF BLACK COTTON SOILS—V. S. Ramachandran, F. U. Ahmad & L. C. Jain, CBRI, Roorkee. *Proc. Indian Acad. Sci.*, **50**, 314-22.

DAY LIGHTING EQUATIONS FOR A STANDARD OVERCAST SKY—T. N. Seshadri, CBRI, Roorkee. *Curr. Sci.*, **28** (1959), 484-85.

METHYLENE GROUPS IN COAL—P.N. Mukherjee, J.N. Bhowmik & A. Lahiri, CFRI, Jealgora. *Brennst Chemie*, **41** (1960), 54-55.

PRODUCTION OF DOMESTIC COKE IN CONTINUOUS VERTICAL NARROW RETORTS—K.Y. Shrikhande & H.C. Chakravarti, CFRI, Jealgora. *J. Mines, Metals Fuels*, **8** (1960), 2, 7-16.

PATENTS & PROCESSES

Applications Filed

71169: *Process for the manufacture of* β-β'-*dichlorodiethyl ether*—N.R. Kuloor, Kanti Kathpalia & C.D. Anand, Shri Ram Institute for Industrial Research, Delhi.

71284 : *Process for electrolytic engraving or etching on metals or alloys thereof*—K.C. Srivastava & O.P. Kulsreshtha, NPL, New Delhi.

71301: *A process for preparation of cadmium sulphide*—K.N. Moorthy, Y. Venkatesham, D.S. Datar & S.H. Zaheer, RRL, Hyderabad.

71321 : *Improvements in the process for the preparation of hydrazine compounds* — E.R. Saxena, D. S. Datar & S. H. Zaheer, RRL, Hyderabad.

Applications Accepted

INDIA

64523 : *A process for the manufacture of water resistant briquettes from lignite and the like*—M.S. Iyengar, T. A. Subramanian & A. Lahiri, CFRI, Jealgora.

65696 : *Production of carbon pastes for use in the continuous solderberg electrodes*—P. Prabhakaram & H. P. Srinivasamurthy, NML Jamshedpur.

U.S.A.

755887 : *Preparation of costus root oil and the products thereof*—G.R. Kelkar & S.C. Bhattacharyya, NCL, Poona.

Applications Sealed

63904 : *A process for recovering zirconium dioxide from zircon*—P.B. Chakravarti & T. Banerjee, NML, Jamshedpur.

64354: *A process for the production of an enzyme product for use in leather manufacture as a depilant or for the preparation of bates*—S. Bose & S.C. Dhar, CLRI, Madras.

Process Ready for Exploitation

CENTRIFUGAL PUMPS

The high-head centrifugal pumps manufactured in India for irrigation purposes have usually low efficiencies as an appreciable portion of the power in such pumps is spent in creating pressure rather than pumping water.

A low-head centrifugal pump with higher efficiency than the conventional pump has been developed (Indian Pat. No. 64168) under a CSIR sponsored research scheme at the Indian Institute of Science, Bangalore. The pump (suction, 4″; delivery, 4″) is of single suction type. Using a 7.5 H.P. motor it can pump 569 gal. of water per minute drawing only 6.55 H.P., with an efficiency of 63.2 per cent.

The salient features of the pump design are : (i) An impeller having half vanes provided between every two full vanes in a forced vortex casing; and (ii) Less vane outlet angle than the vane inlet angle which reduces the shock losses. The greater inlet angle creates a greater velocity in the suction pipe and increases the discharge while the smaller outlet angle reduces the whirl velocity and causes a reduction in the head thereby increasing the specific speed.

Parties interested in the commercial development of the new design of pump are invited to correspond with the Secretary, National Research Development Corporation of India, Mandi House, New Delhi.

OIL OF EUCALYPTUS CITRIODORA

SCOPE OF ITS DEVELOPMENT IN INDIA

by

B. C. Gulati

Essential Oils Research Committee

For copies write to :

The Under Secretary, Publications Directorate, CSIR,
Old Mill Road, New Delhi-1

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R. N. 4212/57

CSIR NEWS

VOL. 10 NEW DELHI—JUNE 11, 1960 : JYAISTHA 21, 1882 No. 11

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MYSORE

SYMPOSIUM ON REDOX PROCESSES

The CSIR Chemical Research Committee is sponsoring a symposium on Redox Processes during January 1961 at the Chemical Laboratories of the University of Allahabad.

Scientists in India and abroad engaged in the above field are invited to participate in the symposium. Abstracts of papers (*c*., 250 words) may be sent in duplicate to Dr. Satya Prakash (Convener), Chemistry Department, University of Allahabad by August 15, 1960. The last date for the receipt of full papers is Dec. 15, 1960.

Intending contributors are requested to send advance information in regard to the titles of papers and their authors to the Convener by July 15, 1960.

PERSONAL

●SHRI T.S.M. SUNDARAM has been appointed Electrical-cum-Mechanical Engineer, CEERI, Pilani, with effect from April 22, 1960.

●DR. G.N. ACHARYA has been appointed Senior Scientific Officer : Grade II, CEERI, Pilani, with effect from June 1, 1960.

●SHRI K. VENKATARAMANI has been appointed Junior Scientific Officer, CEERI, Pilani, on May 14, 1960.

* * *

●SHRI A.N. BASU, Asst. Director, CFRI, Jealgora, who had been to France under Indo-France Technical Cooperation Agreement returned on April 11, 1960. He received pilot plant training at the Charbonnage de France (French National Coal Board) and Institut Francaise de Petrole, and worked at the Marienau Experimental Coking Plant.

* * *

●DR. B. MUKERJI, Director, CDRI, Lucknow, has been nominated a member of the Board of Research, its Working Party on Agriculture and Advisory Board of the Indian Council of Agriculture Research, New Delhi up to March 31, 1961.

●DR. A. LAHIRI, Director, CFRI, Jealgora, has been nominated Chairman of the Chemical Division Council of the Indian Standards Institution.

●SHRI N.V. MODAK, Director, CPHERI, Nagpur, has been nominated a member of the Committee constituted by the Union Ministry of Health to make assessment of the requirements of water supply in urban (including Corporations) and rural areas.

●The following have been nominated member of the Committee/Panel of the Indian Standards Institution :

DR. K.N. MATHUR, Director, CSIO, New Delhi—*Optical and Mathematical Instruments Sectional Committee.*

DR. J.W. WHITAKER, Director and DR. G.N. BADAMI, Asst. Director, CMRS, Dhanbad—*Flame Proof Electrical Equipment Sectional Committee.*

Leather Boards from Leather Waste—Demonstration at CLRI

A practical demonstration of the process of manufacture of leather boards from leather waste for use as insoles will be held at the Central Leather Research Institute, Madras from June 17 to 20, 1960.

●SHRI PITAMBER PANT, Chief, Perspective Planning Division, Planning Commission, New Delhi, has been appointed Member-Secretary of the *Scientific Personnel Committee* of the CSIR.

●DR. D. BANERJI has been appointed Investigator-in-charge of the scheme, *Mechanism of vulcanisation of rubber* (Indian Association for the Cultivation of Science, Calcutta) *vice* Dr. A.K. Sarkar.

Wealth of India

Industrial Products : Part V

The latest addition to the *Wealth of India* series, an encyclopaedic publication on Indian Raw Materials & Industrial Products, published by the Council is *Industrial Products, Part V* covering the letters I, J, K and L.

The present volume features articles on 24 industries, the major ones being : Iron and Steel, Insecticides, Leather, Lead, Lead Compounds, Jute, and Locomotives. Some of the medium and small scale industries included in the volume are : Ice ; Ink, printing and writing ; Lac and Shellac; Lamps and Lanterns ; Lapidary ; Lime; Linoleum ; Lock ; and Lubricants. Cottage industries like Ivory, Jewellery, Katha and Cutch, and Khadi, are also featured.

As in the previous volumes of the series, each article provides comprehensive information on the development and present position of the industry ; availability of principal raw materials ; manufacturing methods; specifications and uses ; and the latest available statistical data on production and trade. Latest processes followed in other countries are indicated with relevant references to literature to enable interested readers to pursue further inquiry. The information on the industries dealt with has been collected from technical literature, Government publications and research reports and periodicals as well as through manufacturers' trade associations, Commerce and Industry Ministries of Central and State Governments and by visits to factories. Coloured plates, text figures and tables have been included at suitable places to elucidate the text.

The publication (Pp. 290, Price Rs. 30) is printed on art paper (demy 4to) and includes 11 plates and 85 text figures. Copies are available from the Under Secretary, Publications Directorate, CSIR, Old Mill Road, New Delhi-1.

BRIEFS

Preservation of Fruits and Vegetables

Canners of fruits and vegetables in the country will find a wealth of information on all aspects of canning and preservation in *Preservation of Fruits and Vegetables* (Pp. 355, Price Rs. 11+Rs. 2 postage) just published by the Indian Council of Agricultural Research, New Delhi.

The authors — Girdhari Lal, G.S. Siddappa and G.L. Tandon of CFTRI, Mysore — have discussed, among other things, details of canning and bottling of fruits and vegetables, containers for canning, syrups and brines for canning, production of jams, jellies and marmalades, and pickles. There are, in addition, chapters on drying of fruits and vegetables, by-products, manufacture of pectin, food colours, vitamins, and use of preservatives.

Training in Radar

The following have been selected for a 4-weeks' practical training in Radar at the Air Force Technical College, Bangalore. The course, which commenced on June 1, 1960 has been arranged by the CSIR Radio Research Committee.

1. SHRI B. B. BHATTACHARRYA—Indian Institute of Technology, Kharagpur.
2. SHRI BISWAJIT NAG—Jadavpur University, Calcutta.
3. SHRI HARDYAL SINGH DEWAN—Central Electronics Engineering Research Institute, Pilani.
4. SHRI K. C. SUTARIA—Tata Institute of Fundamental Research, Bombay.

Research Fellowships

The following have been awarded CSIR Fellowships for research on projects noted against their names :

Senior Fellowships :

DR. (MRS.) ARCHANA SHARMA—*Study of cellular factors controlling sensitivity of plant chromosomes, etc.* (University College of Science, Calcutta).

Junior Fellowships :

1. SHRI H. S. CHHUGANI—*Standardization of methods of soil analysis* (Field Research Station, Bombay).
2. SHRI AMALENDU NALDAR—*High frequency titrations* (Jadavpur University, Calcutta).
3. SHRI A. K. CHATTERJEE—*Study of cellular factors controlling sensitivity of plant chromosomes, etc.* (University College of Science, Calcutta).
4. SHRI U. S. PATHAK—*Optical resolution on synthetic and natural products* (Gujrat University, Ahmedabad).
5. SHRI BIRENDRA LAL GHOSH—*Chemical investigation of Indian medicinal plants with special reference to* Rauvolfia *species, etc.* (University College of Science, Calcutta).
6. MRS. SURYA KANTA SHARMA—*Refining of oleo-resin and turpentine oil and effect of acidic refining agents, etc.* (Indian Agricultural Research Institute, New Delhi)

Research Schemes Terminated

The following research schemes (Investigator-in-charge, Dr. S. V. Ganapati, Officer-in-charge, CPHERI Field Centre, Delhi), have been terminated with effect from Feb. 29, 1960 :

(1) Rheological survey of the Yamuna river between Wazirabad and Okhla.

(2) Studies on sand sizes and filter rates and automatic valveless gravity filters.

(3) Studies on clarification of river derived water supplies with different types of clarifiers.

(4) A definite comparative investigation of the British Ministry of Health and APHA techniques for quantitative detection of coliform group of becteria.

(5) Mirco-filter and its relation to other techniques for estimating coliform densities.

(6) Development of a Public Health Engineering Research Centre in the Water Works, Delhi (block grant).

The research scheme, *Nuclear geophysics and geology* (Investigator-in-charge, Prof. R.S. Krishnan, Indian Institute of Science, Bangalore) has been terminated with effect from June 30, 1960.

Research Papers

A GRAPHICAL METHOD OF DETERMINING OPTIMUM OPERATING CONDITIONS FOR WASHING MIXED COALS—G.G. Sarkar, S. Sakha & A. Lahiri, CFRI, Jealgora. *J. Inst. Fuel*, 33 (1960), 145-150.

INFLUENCE OF AERIAL OXIDATION ON THE BINDERLESS BRIQUETTING OF COALS—M.S. Iyengar & R.S. Ghosh, CFRI, Jealgora. *Fuel*, 39 (1960). 113-117.

DEHYDROGENATION OF COAL BY IODINE — B. K. Mazumdar, S. S. Chowdhury & A. Lahiri, CFRI, Jealgora. *Fuel*, 39 (1960), 181-182.

COAL-SULPHUR REACTIONS—M.S. Iyengar, S.N. Dutta, D.D. Banerjee, D.K. Banerjee & S.K. Rai, CFRI, Jealgora. *Fuel*, **39** (1960), 189-191.

ON THE YIELD OF COKE FROM PYROLYSIS OF COAL—N.C. Sinha, J.M. Sanyal, N.N. Chatterjee & N.N. Das Gupta, CFRI, Jealgora. *Proc. Instn. Chem. India*, **32** (1960), 81-85.

THE NATURE OF SULPHUR GROUPINGS IN ABNORMAL COALS—M.S. IYENGAR, S. GUHA & M.L. BERI, CFRI, Jealgora. *Fuel*, **39** (1960), 235-44.

THE INFRA-RED AND HIGH RESOLUTION NUCLEAR MAGNETIC RESONANCE SPECTRUM OF COAL TAR PITCH—H.S. Rao, G.S. Murty & A. Lahiri, CFRI, Jealgora. *Fuel*, **39** (1960), 263-66.

STORAGE LOSS OF SULPHUR DIOXIDE IN RIPE MANGO PULP PRESERVED WITH BISULPHITES—A.N. Bose & S. B. Lodh, College of Engineering and Technology, Bengal. *J. Instn. Chem. India*, **32** (1960), 9-13.

MANUFACTURE OF OPTICAL GLASS—K. D. Sharma, CGCRI, Calcutta. *All India Glass Manufacturers' Federation Bull.*, Annual Number, **6** (1960), 13-15.

OPTICAL ABSORPTION OF GLASSES CONTAINING IONS WITH PARTIALLY FILLED 3 D-ORBITALS—Pt. I : ABSORPTION BANDS—S. Kumar, CGCRI, Calcutta. *CGCRI Bull.*, 6 (1959), 99-107.

RESEARCH IN PROGRESS

National Laboratories

NML, JAMSHEDPUR

Refractory Clays from South India—Preliminary studies of clay samples from South India have shown that Allalasandra (Mysore) clay may be suitable for the manufacture of semi-silica refractories and the Banasandra (Mysore) and Madras clays for high heat duty refractories. The Chitaldrug clay can also be employed for the manufacture of high heat duty refractories by suitably blending with other refractory clays.

Refractories from Travancore Beach Sand — Zircon refractories comparable to imported products can be manufactured from the zircon sand of Travancore beach.

Investigations conducted at the Laboratory have shown that these refractories possess excellent resistance to molten aluminium alloy, electric furnace slag and basic open hearth slag as well as to severe thermal shocks.

Zircon refractories find extensive use in linings for aluminium remelting furnaces, glass tank furnaces, etc.

CFRI, JEALGORA

Coal Washing—Pilot plant washing tests have been carried out to ascertain the probable size-consist of raw coal for Dugda washery and to find out the quality and yields of different washed products. The plant (capacity, 40 ton/hr.) recently installed at the Institute consists of a 20 tons per hour heavy medium drum type washer and a 20 tons per hour Baum Jig with accessories. The plant is flexible enough for following 6-8 different washing schemes.

Composite coal samples (*c.* 300 ton) drawn from about a dozen collieries from seven different Jharia seams were screened and washed according to two washing schedules in the pilot washery. The yield and ash content of washed products (cleans, middlings and rejects) on the basis of 3″—36 mesh and 3″—0 coal were determined.

The middlings and rejects were sent to D.V.C. authorities for carrying out necessary tests in connection with the designing of the proposed thermal power station at Chandrapura, which will consume the middlings and rejects from the Dugda washery.

CFTRI, MYSORE

Control of Wheat Flour Moth—A bacterial insecticide which prevents the growth of *Ephestia cautella* at 7 p.p.m. level of spore powder in wheat flour has been prepared and used for storage of flour by mixing it during milling. *E. cautella*, the major pest of wheat flour, is difficult to control by the existing pest control methods.

Bacterial Control of Insects—*Bacillus cereus* (var. *thuringiensis*; strain, Heliothis) isolated from a diseased field bean borer has been found to be effective in controlling lepidopterous pests of vegetable crops. The bacterial spore powder prepared on artificial medium is effective against pests when sprayed on crops at the rate of 7-10 g. per acre. The bacterial spore is not harmful to higher animals.

CLRI, MADRAS

Foaming Agents from Carcass By-products—Various tanning and carcass by-products have been tested for producing foam generating substances. Of the products tried, horn, hoof, hair and blood proteins have been found suitable. Protein hydrolysates with high proteose content possess good foaming capacity and foam stability.

The materials are hydrolysed by alkali and suitable stabilisers and preservatives are added to hydrolysates. The final products are analysed for their foaming capacity and foam stability.

RRL, HYDERABAD

Structure and Surfactance—A series of model compounds containing hydrophilic sulphate group were tested for surfactant properties. Compounds with sulphate group in central position have shown superior wetting and emulsifying power. Terminal sulphation is associated with enhanced power to reduce surface tension, increased detersive efficiency and dispersing ability and a high degree of foaming and foam stability.

When a compound (such as the disulphate derived from ricinoleyl alcohol) contains both central and

CFRI, JEALGORA—Coal Washery (40 ton/hr.) installed at the Institute terminal sulphation, wetting power is further augmented. The ability of the terminal sulphates to lower surface tension, and to disperse are unaffected; emulsifying power is medium and similar to the compounds having terminal sulphates but the foaming characteristics are completely suppressed—V.V.R SUBRAHMANYAM & K.T. ACHAYA.

IIBEM, CALCUTTA

Antibiotic Action in Vibrio Cholerae—The mode of action of the broad spectrum antibiotics, penicillin, streptomycin, kanamycin, viomycin, neomycin and novobiocin on *V. cholerae* has been studied. The antibiotics are added to exponentially growing cultures of *V. cholerae* (Inaba type) and the degree of growth inhibition, with concomitant protein and nucleic acid synthesis is measured at different time intervals.

The growth of *V. cholerae* is inhibited by all the above antibiotics except viomycin. Metabolic experiments are being planned with streptomycin and chloramphenicol resistant strains—D. HALDAR, B. GHOSH & A.N. CHATTERJEE.

Sponsored Research

Preservation of Vegetables—Studies on the varietal suitability of pea and cabbage of West Bengal for preservation have been carried out.

Of the fifteen varieties of peas tested, only three varieties, namely, NP 29 IARI, K-Alderman and Hybrid have been found to give good canned product from the point of view of colour, flavour, texture, turbidity and colour of the filling liquid, and stain on the unlacquered tin cans.

The English Ball was the only variety of cabbage found suitable for canning, though loss of ascorbic acid during processing and storage of the canned cabbage was high—A.N. BOSE, K. DAS & S.B. LODH, Jadavpur University, Calcutta.

Aromatic Fluorine Compounds—Studies have been undertaken to synthesise aromatic fluorine compounds to investigate their fungicidal and insecticidal activity. Thirty-eight new compounds of the following types have been synthesised: (i) Fluoro-aryloxy fatty acids and their mono-mercurated derivatives (12 compounds) and (ii) amide derivatives of fluoro-phenoxy carboxylic acids (26 compounds)—K.C. JOSHI & S.C. BAHEL, University of Gorakhpur, Gorakhpur.

PATENTS & PROCESSES

Applications Filed

INDIA

71702: *A process for decolorisation of glass*—Atma Ram, S.K. Gupta & S.N. Prasad, CGCRI, Calcutta.

71754: *Surface active agents from cashew nut shell liquid*—S.C. Sethi, (Miss) S.B. Kulkarni & B.C. Subba Rao, NCL, Poona.

GERMANY

C 21 167 IVb/120: *An improved process for the manufacture of maleic anhydride* — B. S. Trehan, R.T. Thampy & N. R. Kuloor, Shri Ram Institute for Industrial Research, Delhi.

Process Ready for Exploitation

SULPHUR FROM INDUSTRIAL GASES

Industrial gases obtained from coal and oil have to be freed from sulphur (present in organic and in inorganic forms) before they are used as fuel and in chemical industries.

The Central Fuel Research Institute has developed two separate catalysts (Indian Pat. Nos. 55816 and 55817) for removal of both inorganic and organic sulphur from gases utilizing indigenous raw materials. The catalysts have been successfully manufactured on pilot plant scale in batches of 100 lb. and 40 lb. respectively.

The catalyst for removal of inorganic sulphur is worked at about 40°C. at a space velocity of 50-150 vol./vol. cat./hr. for coal gas and 150-250 for water gas and producer gas depending upon the H_2S content of the gases. Regeneration is effected by passing air through the bed at a space velocity of 50-60 for 18-20 hr.

The catalyst for organic sulphur removal is reactive at 250-270°C., at space velocity of 250-300 vol./vol. cat./hr. It can be regenerated by passing oxygen gas at a space velocity of about 200 for 1 hr. at 200°C.

The total capital outlay for a plant capable of producing 1 ton of catalyst is estimated at Rs. 57,000 for inorganic sulphur removal and Rs. 3,67,000 for removal of organic sulphur.

Parties interested in taking up the commercial development of the catalysts are invited to corrsespond with the Secretary, National Research Development Corporation of India, Mandi House, New Delhi-1.

NEW PUBLICATIONS

THE WEALTH OF INDIA
INDUSTRIAL PRODUCTS: Part V (I-L)

Gives a comprehensive account of development and present position of 24 Indian Industries

Pp., Xiii + 290 + X; Demy 4to; 11 Plates; 85 Illustrations

Price: Rs. 30

KINETICS OF ELECTRODE PROCESSES AND NULL POINTS OF METALS

Comprises a series of lectures delivered by Prof. L. I. Antropov of U. S. S. R. at the CECRI, Karaikudi on the theory and practical application of electrode processes

Pp., 94; Demy 8vo

Price: Rs. 5

Copies available from:

Under Secretary, Publications Directorate, CSIR,
Old Mill Road, New Delhi-1.

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CSIR NEWS

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LIBRARY MYSORE

SYMPOSIUM ON LOAD BEARING CAPACITY OF SOILS

Soil engineers from India and abroad will participate in a symposium on Load bearing capacity of soils scheduled to be held in New Delhi during January 1961. The Central Building Research Institute, Roorkee and the National Buildings Organization, New Delhi are collaborating in organizing the event which will cover the following aspects :

1. Field bearing capacity tests and their interpretation.
2. Laboratory bearing capacity tests and their interpretation.
3. Settlements, their estimation, and permissible allowances.
4. Theories on bearing capacities and their application to design.

Intending contributors are requested to send summaries of papers to the Director, Central Building Research Institute, Roorkee, before Aug. 31, 1960. Full papers should reach by the end of October.

Prof. M. S. Thacker

Prof. M. S. Thacker, Secretary, Ministry of Scientific Research and Cultural Affairs and Director-General, Scientific & Industrial Research, is proceeding on a 6-week tour of Europe on June 25, 1960. He will visit France, U. K., West Germany and Switzerland.

During his stay in Paris, Prof. Thacker will address two meetings on scientific problems. He will be in London to attend the meeting of the heads of departments of Commonwealth scientific and industrial research institutions and the Tercentenary Celebrations of the Royal Society as a representative of the Government of India and the Council of Scientific & Industrial Research, India.

In Bonn, Prof. Thacker will discuss the question of scholarships for Indian students going to West Germany. He will also visit Copenhagen and Zurich before he returns to New Delhi on August 7.

NPL MEETING

A meeting of the Executive Council of the National Physical Laboratory, New Delhi, will be held in the Conference Room of the Laboratory on July 14, 1960 at 11.00 a.m. Shri A. Ramaswami Mudaliar will preside.

PERSONAL

●Dr. H.A.B. Parpia, Officer-on-Special Duty (Extension) has been appointed Industrial Liaison and Extension Officer, CSIR, New Delhi, with effect from June 7, 1960.

●Shri M.N. Gupta has been appointed Senior Scientific Officer: Grade II, NBG, Lucknow, with effect from May 14, 1960. He left for Japan on May 28 for training in agriculture under a Japanese Government scholarship.

●Sarvashri S.D. Khanduja and S.K. Nigam and Drs. K.P. Srivastava and P.K.K. Nair have been appointed, on promotion, Junior Scientific Officers, NBG, Lucknow, with effect from May 18, 1960.

●Kumari Mary Korah has been appointed Junior Scientific Officer, NBG, Lucknow, with effect from June 2, 1960.

●Sarvashri G.S. Sidhu, H.K. Sharma and J.L. Bahri have been appointed, on promotion, Junior Scientific Officers, CEERI, Pilani, with effect from May 24, 1960.

●Shri T.N. Shiva Shankar has been appointed Junior Scientific Officer, CEERI, Pilani, with effect from June 10, 1960.

●Shri E.N. Roy has been appointed, on promotion, Section Officer: Grade II, CFTRI, Mysore, with effect from March 2, 1960.

●Shri S.L. Jain has been appointed Section Officer: Grade III, CECRI, Karaikudi, with effect from May 25, 1960.

●Dr. J.L. Sarin, Industrial Liaison Officer, CSIR, New Delhi, relinquished charge of his post with effect from June 1, 1960.

●Shri J.C. Maheshwary, Stores Verification Officer, CSIR, has been relieved of his duties with effect from May 27, 1960, consequent on his appointment as Senior Research Officer in the National Research Development Corporation of India, New Delhi.

* * *

●Dr. A.P. Mitra, Asst. Director, NPL, New Delhi, left for Greece on June 18, 1960 to participate in the symposium on *Ionospheric absorption of radio waves* at the University of Athens.

●Shri A. P. Chowdhury, Senior Scientific Officer, NML, Jamshedpur, left for U.K. on May 30, 1960 for training in *Design and development of electronic instruments for metallurgical research industry* under the Colombo Plan.

●Dr. K. S. Krishnan, Director and Shri Prem Prakash, Asst. Director, NPL, New Delhi, have been nominated Principal and Alternate members respectively, of the *Engineering Division Council* of the Indian Standards Institution.

●Dr. B. R. Nijhawan, Director, NML, Jamshedpur, has been nominated a member of the Committee constituted by the Union Ministry of Steel, Mines and Fuel to consider problems in the production of iron ores and fundamental studies of various processes.

●Dr. S.K. Barat, Asst. Director, CLRI, Madras, has been nominated a member of the *Vegetable Tanning Materials Sub-Committee* of the Development Council for Leather, Leather Goods and Picker Industries constituted by the Union Ministry of Commerce & Industry.

BRIEFS

Appraisal of Steel Demand

The 138-page Report, just published, is the outcome of a study undertaken on behalf of the CSIR Committee on Steel Demand Appraisal by the National Council of Applied Economic Research to estimate the requirements of steel in India in relation to total availability in the country. The estimates, in the aggregate and by categories, refer to requirements of finished steel at the end of the Second, Third and Fourth Plans, that is, in the years 1960-61, 1965-66 and 1970-71.

Industry-wise estimates of demand are given for the railways ; roads, and road bridges and other transport and communications; industrial machinery; electrical engineering industries; mechanical and general engineering industries; and mining and metal industries.

For 1960-61, the total requirements of finished steel by the large scale and medium industries, which are the most important of the steel consuming sectors of the economy, have been estimated at 1.57 million tons. The corresponding figures for 1965-66 and 1970-71 are 3.60 and 7.97 million tons respectively. The requirements for small scale industries are estimated at 300,000 tons by 1960-61, 450,000 tons by 1965-66, and 800,000 tons by 1970-71.

The estimates for all the sectors are 3.61 million tons by 1960-61, 7.2 million tons by 1965-66 and 12.9 million tons by 1970-71.

RECOMMENDATIONS

The Report recommends the setting up of an organization to collect and disseminate information in respect of production and consumption of steel by public and private sectors following the pattern of the U.K. Iron and Steel Board and the American Iron and Steel Institute. Periodical studies should be carried out of the demand for and supply of steel, categorywise, by a realistic re-appraisal of the progress of different industries and sectors. In planning the production programme for expansion of the steel industry, special attention should be paid to raise the capacities for flats and rounds, wire, skelp and special steel.

Copies of the Report (Price Rs. 10) are available from the Under Secretary, Publications Directorate, CSIR, Old Mill Road, New Delhi-1.

Scientists' Pool

The Council of Scientific & Industrial Research, in consultation with the Union Public Service Commission, have selected 136 persons for appointment in the Pool of Scientists. The selection has been made from among scientists, technologists, engineers and medical personnel registered in the *Indians Abroad* Section of the National Register of the CSIR and from other applicants.

The Pool, established in 1958, provides temporary placement to well-qualified Indian scientists and technologists returning from abroad, as well as persons with Indian qualifications who have outstanding academic records.

NAL, Bangalore

DR. PAUL D. ARTHUR., Vice-President, *Systems Corporation*, U.S.A., visited the National Aeronautical Laboratory, Bangalore, on May 30-31, 1960.

Dr. Paul delivered four lectures on space mechanics, problems of hypersonic flight, and atmospheric re-entry. Scientific officers of the Laboratory and engineers and scientists from *Hindustan Aircraft Ltd.*, the Indian Institute of Science, and the Ministry of Defence Research Establishment at Bangalore attended the lectures and took part in the discussions.

Research Fellowships

The following have been awarded CSIR Fellowships for research on projects noted against their names :

Senior Fellowship

SHRI M. RAMANATHAN—*Ultimate strength of reinforced concrete beams, etc.* (P.S.G. College of Technology, Coimbatore).

Junior Fellowships

1. SHRI K. JAMES DEVARAJ—*Investigation on temperature stresses in rigid pavements under Indian conditions* (Highways Research Station, Madras).

2. SHRI MIHIR KUMAR SAHA—*Absolute values of rate constants in polymerization* (Indian Association for the Cultivation of Science, Calcutta).

Research Schemes Terminated

The following research schemes have been terminated with effect from June 30, 1960 :

1. *To determine the structure of asymmetric molecules by microwave spectroscopy and their dipole moments*—Dr. S.N. Ghosh, J.K. Institute of Applied Physics, Allahabad University, Allahabad.

2 & 3. *Study of diffuse X-ray reflection and determination of elastic constants of crystals* ; and *Study of low angle X-ray scattering of natural and synthetic fibrous materials*—Prof. K. Banerjee, Head of the Physics Department, Allahabad University, Allahabad.

4. *Production of optical flats*—Shri S. Hariharan, Assistant Professor, Madras Institute of Technology, Madras.

5. *Physical properties of gelatinous substances*—Dr. A.M. Srivastava, Physics Department, Allahabad University, Allahabad.

6 & 7. *Investigation in combustion and absorption spectra of various substances ;* and *Study of rotation vibration electronics and Raman spectra of carbon disulphide*—Dr. Devendra Sharma, Lecturer in Physics, Allahabad University, Allahabad.

8. *Studies in enzymes reaction in experimental diabetes*—Prof. M.C. Nath, Head of the Department of Biochemistry, Nagpur University, Nagpur.

9. *Biological role of metaphosphate in micro-organism*—Prof. P.S. Krishnan, Professor of Biochemistry Lucknow University, Lucknow.

10. *Nuclear quadrupole moments*—Prof. K. Rangadhama Rao, Andhra University, Waltair.

11. *Imperfection in crystals and the study of growth and etch phenomena in crystals*—Dr. A.R. Verma, University of Delhi, Delhi.

* * *

Consequent on the appointment of Dr. N. R. Kuloor as Professor of Chemical Technology and Chemical Engineering at the Indian Institute of Science, Bangalore, the research scheme *Pilot plant preparation of ethylene oxide and its products* has been transferred from Shri Ram Institute for Industrial Research, Delhi to Indian Institute of Science, Bangalore.

RESEARCH IN PROGRESS

National Laboratories

CFRI, JEALGORA

Metallurgical Coke from Weakly Caking Coals—A new process for utilizing non-coking and weakly caking coals for the production of metallurgical grade coke is being studied. In this process the non-coking coal or weakly caking coal, crushed to suitable size, is rapidly flash-heated to about 400°C. and blended with another stream of coking coal also preheated to a suitable temperature. The blend is maintained for an optimum period in the maintenance tube and then extruded at 410-420°C., the temperature varying with the coal. The dough-like extrudes are then carbonized at 750°C. to yield coke suitable for metallurgical purposes.

Several runs have been made with the high volatile, weakly caking Dishergarh coals, and blends of Dishergarh coals and the completely non-coking Jambad-Bowlah coals. Laboratory scale extrusion has shown possibilities of obtaining metallurgical coke from a blend of Dishergarh and Jambad-Bowlah coals in equal proportion—H. C. Nandi, S. B. Chowdhury, M. S. Iyengar & A. Lahiri.

Cracking of Petroleum Wax—Conditions for the production of diesel and lubricating oils by catalytic cracking of petroleum wax from Nahorkatiya crude have been studied.

Paraffin wax was cracked in a vertical silica-alumina furnace using a calcium oxide promoted silica-alumina catalyst and products distilled up to 300°C. The oil obtained was polymerized in the presence of anhydrous aluminium chloride and redistilled into the following fractions: (i) gasoline (up to 200°C.), (ii) diesel oil (200-350°C.) and (iii) heavy oil (above 350°C.). The products obtained by the fractionation of polymerized oil from gases above 250°C. can be used as lubricating oils.

Cracking is more efficient at lower liquid space velocities, when carbon deposits are as low as 1.6 per cent. Solvent loss during polymerization of gases increases with decrease in space velocity. A maximum yield of 22 per cent of diesel oil was obtained at 550°C. and space velocity of 0.70.

The diesel oil is predominantly paraffinic and can be classified under 'A' category of the British Standard Specification. The heavy cracked oil from the residue above 300°C. is suitable for hydrogenation to give high-speed diesel oil and kerosene oil—N. G. Basak, G. S. Bhargava & A. Lahiri.

CLRI, MADRAS

Shrinkage Temperature Tester—A simple low-cost apparatus for determining shrinkage temperature of leather (an indication of the completion of tanning process) has been designed and fabricated. Industry's requirements of such testers are at present met by imports.

The apparatus consists of two clamps, one fixed and the other moveable. The weight of the moveable clamp is counterbalanced by a small pulley and weight system with a pointer attached to the pulley. For testing, the leather specimen to be tested is fixed between the clamps and immersed in water contained in a beaker. The water is then heated electrically or by a flame. When the leather shrinks, the pulley rotates and the pointer magnifies this rotation on a circular scale. The temperature of water at this point gives the shrinkage temperature.

CLRI, MADRAS—Shrinkage temperature tester designed and fabricated at the Institute

CSRI, BHAVNAGAR

Recovery of Mixed Salts from Bitterns—In the recovery of mixed salts from bitterns, the addition of Solivap Green has been found to double the solar evaporation rate. In experiments carried out under natural condition during April-May for evaporation of bitterns from 29.5 Be to 36.0° Be, the addition of Solivap Green reduced the period of evaporation from 20 days to 9 days.

IIBEM, CALCUTTA

Free Amino Acids in Leishmania Donovani—Nearly all the naturally occurring amino acids — glycine, serine, alanine, methionine, valine, etc. — have been found to occur in *L. donovani*. The behaviour of this free acid pool under conditions of nitrogen and carbon starvation is being studied.

A peptide present in the acid pool has been eluted from paper chromatograms and the nature of its constituent amino acids is under investigation—B. Ghosh, D. Haldar & A. N. Chatterjee.

CPHERI, NAGPUR

Filtration—Filters used in water works are usually designed for 80 gal./sq. ft./hr discharge irrespective of depth and specifications of sand bed and turbidity of water to be treated. Studies carried out at the Institute for correlating discharge and depth, effective size, and uniformity coefficient of sand reveal that 14 in. depth of sand with an effective size of 0.52 mm. and a uniformity coefficient of 1.3 gives a discharge of 140 gal./sq. ft./hr with a turbidity of 7.8 p.p.m. (which is less than United States Public Health Standard for drinking water). The finding is likely to bring about considerable economics in the cost of civil works for water filters.

RRL, JAMMU

High Polyploid Mint—Cytological examination of the Japanese mint, *Mentha arvensis* var. *piperascus*, cultivated at the Laboratory farm has indicated it to be a high polyploid form (2n=96) of the wild field mint of Europe and North Asia.

Attempts made to double the chromosome number of the Japanese mint have proved successful and a clone with 2n=192 has been evolved by the application of colchicine on suckers of the 2n=96 plant.

This is the highest chromosome number so far recorded for any mint. The new mint is more robust and has larger and greener leaves than the *Mentha* plant. The performance of this new clone in the Laboratory and in fields as a possible high yielder of menthol is under observation.

Sponsored Research

Effect of Antivitamins on Bacterial Metabolism—The following pteridine and pyrimidine derivatives have been synthesized and tested for their inhibitory action in the biosynthesis of nucleic acid : Thiosemicarbazone, semicarbazone and *p*-chloroanil of 2-amino-4-hydroxy-6-pteridine carboxaldehyde (A) ; 6, 7-Diphenyl, and 6, 7-dimethyl, 2-amino-4-(*p*-chloroanilino)-pteridine (B) ; 4-Amino-6-hydroxy pyrimidine with the groups, phenylguanidino-, *p*-anisylguanidino-, *p*-tolylguanidino-, *p*-nitrophenylguanidino-, *p*-chlorophenylguanidino-, anilino-, *p*-toluidino- and *p*-chloroanilino-, at the 2-position (C) ; 2-Amino-6-hydroxy pyrimidine with the groups, anilino-, *p*-toluidino- and *p*-chloroanilino-, at the 4- position (D); 2,4-Bis (*p*-toluidino)- and 2,4-bis (*p*-chloroanilino)-6- hydroxypyrimidine (E).

All the derivatives strongly inhibit the growth of *Streptococcus faecalis*, *Lactobacillus arabinosus* and *Escherichia coli*. The compounds (A) are competitive inhibitors of folic acid in regard to the growth of *S. faecalis*. The compounds (B) are non-competitive inhibitors of folic acid in regard to the growth of *S. faecalis* but these partially interfere with the purine metabolism—a folic acid catalysed action—of the micro-organisms.

Unlike the 2,4-diamino pyrimidines the substituted amino pyrimidines (having phenylamino or similar heavy groups in the 2- or/and 4-position) are non-competitive inhibitors of folic acid in regard to the growth of *S. faecalis*. These substituted amino pyrimidines at low concentrations appear to interfere partially with pyrimidine metabolism of the micro-organisms, namely the synthesis of DNA-thymine from its precursors, but at higher concentrations, they affect other reactions vital for the growth of the organisms. These possess greatly enhanced inhibitory property with regard to all the organisms as compared to the parent 2,4-diamino-6-hydroxy pyrimidine. The inhibitory activity is further increased when both the —NH_2 groups at C_2 and C_4 positions are replaced by arylamino groups. It is further observed that the electron attracting groups (—Cl, —NO_2) in the *para* position of the benzene ring enhance antibacterial activity much more than an electron donating group (—OCH_3, —CH_3) in the same position.

2, 4-Bis (*p*-chloroanilino) - 6-hydroxy pyrimidine (E_1) is the most powerful inhibitor amongst the compounds synthesized. The inhibitory activity of the compound (E_1) is fairly strong as compared to some well known nucleic acid inhibitors, namely azauracil, azathymine, bromouracil, and pyrimithaunine. It has been found to be highly active against the phage of *Shigella shigae*, which indicates its anti-viral potentiality.

The pteridine and pyrimidine derivatives have been tested at the Sloan-Kettering Institute, New York, for possible anti-tumour activity on mouse sarcoma 180 or mouse adenocarcinoma 755 ; none of them shows any noticeable anti-tumour activity except the compound (E_1) —B.C. GUHA, SUDHAMOY GHOSH & (MISS) DOLLY ROY, University College of Science and Technology, Calcutta.

PATENTS & PROCESSES

Applications Filed

INDIA

71864 : *Improvements in or relating to the production of α-halotoluenes*—S. Husain Zaheer, Baldev Singh, Bharat Bhushan, S. Iqbal Ahmed, I. K. Kacker, V. Krishnamoorthy & M. Zulfiqar Ahmed, RRL, Hyderabad.

71919 : *An universal fluid flow indicating manometer for flow indication in closed conduits*—R. K. K. R. Govindarajan, P. S. G. College of Technology, Coimbatore.

71945 : *Long acting oestrogens and other physiologically active compounds from stilbesterol and formaldehyde*—M. M. Dhar & A. B. Kar, CDRI, Lucknow.

71946 : *Improvements in or relating to the manufacture of chlorohydrin*—R. T. Thampy, N. R. Kuloor, (Mrs.) Kanti Kathpalia & C. D. Anand, Shri Ram Institute for Industrial Research, Delhi.

71978 : *Improvements in and/or relating to the electrolytic reduction of m-dinitrobenzene to 2 : 4 diaminophenol*—H. V. Udupa, G. S. Subramanian & K. S. Udupa, CECRI, Karaikudi.

U. S. A.

20329 : *An improved process for the manufacture of maleic anhydride*—B. S. Trehan, R. T. Thampy & N. R. Kuloor, Shri Ram Institute for Industrial Research, Delhi.

Application Accepted

65543 : *A process for the preparation of αω-dicarboxylic acids and α-hydroxy acids suitable for conversion to macrocyclic compounds*—H.H. Mathur & S. C. Bhattacharyya, NCL, Poona.

Process for Salicylaldehyde

The process (Indian Pat. Nos. 52631 and 60864) for the manufacture of salicylaldehyde developed at the Central Electrochemical Research Institute, Karaikudi has been leased out for commercial exploitation to *M/s. Dahyabhai Chahaganlal*, Bombay.

APPRAISAL OF STEEL DEMAND

Report of the National Council of Applied Economic Research

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Price : Rs. 10

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Old Mill Road, New Delhi-1

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CSIR MEMBER OF INTERNATIONAL SCIENCE FOUNDATION

The Council of Scientific & Industrial Research has become a Participating Member of the International Science Foundation (ISF) San Francisco.

The membership will extend to CSIR representatives visiting the United States the facilities of Science Centres operated by ISF for exchanging ideas and developing professional cooperation with their colleagues in the U.S. and overseas. At present the Foundation operates two Centres, at San Francisco and at Los Angeles.

Established in 1953 as a non-profit Corporation, the Foundation's membership structure is tailored to integrate the cooperative efforts of academies of science, research councils, scientific and engineering societies, etc. Its programmes seek to promote exchange of ideas among scientists and engineers through its Centre activities, travel grants, exchange of publications and by developing cooperative research projects between members.

Other members of ISF outside the U.S. include national scientific organizations of U.K., France, Belgium, Netherlands, Sweden, Germany, the Philippines, Japan and Pakistan.

PERSONAL

- SHRI T.K. NATARAJAN has been appointed, on promotion, Senior Scientific Officer : Grade I, CRRI, New Delhi, with effect from May 12, 1960.

- SHRI P.M.K. GANDHI has been appointed Senior Scientific Officer : Grade II, CRRI, New Delhi, with effect from May 3, 1960.

* * *

- SHRI M.M. SEN, Junior Scientific Officer, CFRI, Jealgora, who had been to France for pilot plant training under the Indo-French Technical Cooperation Agreement resumed duty with effect from June 4, 1960.

- DR. B. MUKERJI, Director, CDRI, Lucknow, has been nominated a member of the Scientist's Committee proposed to be constituted by the Government of Maharashtra to advise on research and other development activities at the Haffkine Institute, Bombay.

- DR. V. SUBRAHMANYAN, Director, CFTRI, Mysore, has been nominated a member of the Sub-Committee of the Technological Standardization Committee (Foodstuffs) constituted by the Army Purchase Organization, Ministry of Food & Agriculture to examine the requirements of tin plate for fabrication of open-top cans used for packing tinned foodstuffs for supply to Defence Services.

- SHRI A.N. BASU, Asst Director, CFRI, Jealgora, has been nominated a member of the *Coal Carbonization Bye-Products Committee* constituted by the Union Ministry of Commerce & Industry.

- DR. S.M. DAS GUPTA, Regional Liaison Officer (Calcutta Circle), has been nominated a member of the Sisal Sub-Committee set up by the Government of India to advise on the development and research on sisal fibre. He has also been enrolled as Associate Member of the *Institution of Engineers* (*India*).

- DR. T.H. SHAMA RAU, Senior Scientific Officer (Information), CDRI, Lucknow, has been elected a member of the *Institute of Information Scientists, U.K.*

- DR. R.K. SRIVASTAVA, Publications Officer, CFRI, Jealgora, has been elected Associate Member of the *Institute of Information Scientists, U.K.*

- The following have been nominated members of the Committee/Panel of the Indian Standards Institution :

DR. M. SRINIVASAN, Asst. Director, CFTRI, Mysore—*Glucose Sectional Committee.*

DR. N.L. LAHIRY, Asst. Director, CFTRI, Mysore—*Ante Mortem Examination of Meat Producing Animals, Piggary Products, and Meat and Meat Product Sub-Committees.*

SHRI PREM PRAKASH, Asst. Director (Principal Member) and Shri M.K. SEN GUPTA, Junior Scientific Officer (Alternate Member), NPL, New Delhi—*Optical and Mathematical Instruments Sectional Committee.*

DR. J. GUPTA, Asst. Director (Principal Member) and DR. P.R. SUBBARAMAN, Junior Scientific Officer (Alternate Member), NCL, Poona—*Methods of Chemical Analysis Sectional Committee.*

DR. BH. SUBBARAJU, Asst. Director, CRRI, New Delhi—*Construction Plant and Machinery Sectional Committee.*

(*Contd. on p. 2, col. 2*)

Symposium on Proteins

Further details are now available in regard to the symposium on Proteins (*CSIR News*, Vol. 10, No. 10, p. 1) to be held at the Central Food Technological Research Institute, Mysore , during Aug. 14-16, 1960.

Jointly sponsored by the Chemical Research Committee of the CSIR and the Society of Biological Chemists, India, the symposium will be inaugurated by Prof. M. S. Thacker, Director-General, Scientific & Industrial Research. Shri B. D. Jatti, Chief Minister of Mysore will preside.

Intending participants should send in their papers along with abstracts (*c.* 300 words) so as to reach Dr. A. Srinivasan, Deputy Director, Central Food Technological Research Institute, Mysore, by July 15, 1960.

Participants are also invited to exhibit during the symposium experimental preparations or industrial products relating to proteins and their utilization.

BRIEFS

Techniques for Wind Tunnel Tests

With the advent of transonic and supersonic flight, highly complex aerodynamic techniques of testing in wind tunnels are called for. Under a scheme sponsored by the CSIR at the Department of Aeronautical Engineering, Indian Institute of Science, Bangalore, experimental and theoretical studies are being undertaken to evaluate known information on wind tunnel testing techniques and to provide extensions which would be needed for designing transonic and supersonic aircraft in India.

Interference properties of ventilated wall transonic test sections have been studied in detail with specific reference to the use of small wind tunnels which require only small amounts of power and are within the limited facilities available at present. This study has led to defining the importance of the plenum chamber dimensions surrounding ventilated walls. Another experimental technique built up during this work has been the use of an electrical analogy apparatus which seeks to solve the aerodynamic problem on an electrolytic tank.

On the theoretical side it has been possible to determine, in a preliminary way, the manner in which the parameters of tunnel size and wall porosity enter into the interference problem.

The work carried out so far has been reported in a series of technical reports. Some of the results will prove valuable for the design of a large modern transonic/supersonic wind tunnel under way at the National Aeronautical Laboratory, Bangalore.

Metallurgical Research and Industry

The role played by the National Metallurgical Laboratory, Jamshedpur in the development of metallurgical research and industry in India is portrayed in a 22-page brochure entited, 'Metallurgical Research and Industry'. The brochure outlines the results of investigations carried out at the Laboratory, with particular reference to the production of pig iron from sub-standard iron ores using non-coking coals in a 15-ton low-shaft furnace, production of steel by L.D. process, and development of ferro-alloys. Other researches highlighted in the brochure relate to up-grading of manganese ores, developments in refractories, foundry sands and nickel-free stainless steel compositions.

Copies of the brochure are available from the Director, National Metallurgical Laboratory, Jamshedpur.

Research Schemes Terminated

The following research schemes have been terminated with effect from the date noted against them.

1. *Investigation on the nature and kinetics of reactions and physico-chemical structure of various phenolics*—Dr. M. Santhappa, American College, Madurai : June 30, 1960.
2. *Investigation on absorption and fluorescene spectra of molecules*—Dr. K. Majumdar, Allahabad University, Allahabad : June 30, 1960.
3. *External ballastics—Development and application of numerical methods, etc.*—Prof. H. Gupta, Panjab University, Chandigarh : June 30, 1960.
4. *Spectrographic investigations of the ocean bed samples*—Dr. P. Tiruvenganna Rao, Andhra University, Waltair : June 30, 1960.
5. *Kinetics and mechanism of the interactions of phenol and substituted phenols with formaldehyde*—Dr. L. M. Yaddanapalli, Head of the Chemistry Department, Loyola College, Madras : Sept. 30, 1960.
6. *Jute resins (natural and synthetic) combination*—I. B. Chakaravarti, Indian Jute Mills Association Research Institute, Calcutta : October 31, 1960.

PERSONAL

(*Contd. from p. 1, col. 3*)

Shri H.V. Mirchandani, Asst. Director, CBRI, Roorkee—*Western Zone Sub-Committee.*

Dr. S. Sen, Senior Scientific Officer (Principal Member) and Shri B.K. Agarwal, Junior Scientific Officer (Alternate Member), CGCRI, Calcutta—*Methods of Chemical Analysis Sectional Committee.*

Shri R.K. Tandon, Senior Scientific Officer, NPL, New Delhi—*Insulating Materials Sectional Committee* and *Standing Working Committee Electrotechnical.*

Shri A.K. Bhowmik, Senior Scientific Officer, CBRI, Roorkee—*Central Zone Sub-Committee.*

Shri M.V. Joshi, Senior Scientific Officer, NPL, New Delhi—*Panel for Semi-conductor Devices* (*Transistors*).

* * *

● Shri Saroj Kanti Majumdar, Senior Research Fellow (Scheme : Large scale production of mycobacillin, Department of Applied Chemistry, Calcutta) has been awarded the D.Sc. degree by the Calcutta University for his thesis, *Studies on Mycobacillin, a new antifungal antibiotic from Bacillus subtilis.*

* * *

The news-item pertaining to Dr. A. Lahiri published on p. 1, col. 2 of the *CSIR News*, Vol. 10, No. 11 should read as follows :

Dr. A. Lahiri, Director, CFRI, Jealgora, has been nominated Chairman of the Solid Mineral Fuels Sectional Committee (Chemical Division Council) of the Indian Standards Institution.

Dr. B. K. Bhattacharya

Dr. Bani Kanta Bhattacharya, M. B.B. S. (Calcutta), Ph. D. (Lond.) has been appointed Asst. Director (Chemotherapy), CDRI, Lucknow, with effect from April 19, 1960.

Before joining this Institute, Dr. Bhattacharya (*b.* June 1, 1916) worked as bacteriologist in the Indian Institute of Science, Bangalore and CIPLA Ltd., Bombay. He also worked as Medical Officer with the World Health Organization.

Dr. B. C. Kundu

Dr. Balai Chand Kundu, M. A. (Calcutta), Ph.D. (Leeds) has been appointed Asst. Director, CDRI, Lucknow, with effect from June 8, 1960.

Dr. Kundu (*b.* September 1904) worked as Lecturer, Ravenshaw College, Cuttack; Research Scholar, Calcutta University; Professor of Botany, Presidency College, Calcutta; and Director, Jute Agricultural Research Institute (West Bengal) before taking up the present assignment. He is associated with various scientific societies and learned bodies in India and abroad.

Dr. Kundu has published more than 100 research papers. He is also author of text books in botany and biology and a monograph on Jute published by the Indian Central Jute Committee.

RESEARCH IN PROGRESS

National Laboratories

CFRI, JEALGORA

Methylene Groups in Coal—Regardless of its rank, carbonyl groups are produced in coal as a result of aerial oxidation at moderate temperature, which can also be produced by exhaustive chlorination followed by hydrolysis in alkaline medium. An almost quantitative agreement exists between the values of carbonyl groups obtained by the two methods.

The formation of carbonyl groups on oxidation suggests that coals contain either methylene groups of diphenyl methane type or secondary alcoholic groups. It is known, however, that hydroxyl groups present in coal are phenolic in character. On the basis of oxidation studies it may be suggested, therefore, that coals contain methylene groups in its structure. Formation to the same extent of carbonyl group on chlorination followed by hydrolysis lends strong support to the view that methylene bridge structures are present in coal connecting the aromatic units —P. N. Mukherjee, J. N. Bhowmik & A. Lahiri.

CDRI, LUCKNOW

Gonadotrophic Hormone—Of a number of aromatic compounds tested for their ability to inhibit the response of immature female rats to exogenous gonadotrophic hormone, chloroacetocatechol has been found to be the most active. Effective dosage range, activity after *in vitro* incubation with gonadotrophin and suitable route for administration of the drug have been investigated. 2, 4-Dihydroxy-acetophenone, thymol, 4-methyl uracil, vanillin and 2-diethylaminoethyl-2, 2′-diphenyl valerate hydrochloride (SKF 525A) tended to potentiate only the secondary aspects of gonadotrophin action as shown by a marked stimulation of uterine weight. The possible oral contraceptive properties of chloroacetocatechol are under study.

CGCRI, CALCUTTA

Fireclay Refractories—Good quality fireclay refractories satisfying I. S. specifications have been produced from clays having 23-33 per cent Al_2O_3. Unlike conventional processes, addition of bauxite in clay and high temperature firing are not required in this process (Indian Pat. 64176). The amount of mineralizer required varies according to the Al_2O_3 content of clay, the maximum being about 2.5 per cent with low alumina clays.

RRL, HYDERABAD

Road Tar from Low-Temperature Tar—A process for the preparation of good quality road tar from tar produced by the low-temperature carbonization pilot plant (capacity, 25 ton/day) operating in the laboratory has been developed. The process which is being patented essentially consists in the preparation of the base pitch by blowing air through the tar at about 300°C. in the presence of catalysts and blending the pitch with suitable tar oils to obtain road tar of the required grade. These samples have been found to be satisfactory as road binders.

Large quantities of low temperature tar are expected to be obtained as by-product from the commercial low-temperature carbonization plants likely to be set up in India for the manufacture of smokeless domestic coke.

IIBEM, CALCUTTA

Action of Antibiotics on Leishmania donovani—The polyne antibiotics, nystatin and amphotericin B, have been found to be highly active against *Leishmania donovani*. The antibiotics strongly inhibit both aerobic and anaerobic metabolism of resting cell suspensions of *L. donovani*. The inhibition pattern is the same for endogenous metabolism and also in the presence of utilizable substrates. The mode of action of these antibiotics has been shown to be due to their attack on cell wall or cell membrane; after 5 min. contact with these antibiotics, cellular constituents like nucleic acids and free amino acids leak out in the incubation medium. The antibiotics do not inhibit the enzyme systems of *L. donovani*—B. Ghosh, D. Haldar & A. N. Chatterjee.

CPHERI, NAGPUR

Sedimentation in Water Treatment—Pilot plant studies carried out by the Delhi Field Centre of the Institute at the Chandrawal Water Works, Delhi have shown that by using the clariflocculator designed by the Institute, the turbidity of water can be considerably reduced with a retention period of ½ hr for flocculation and 1 hr. for sedimentation. The finding is likely to effect considerable savings in the capital cost of water treatment plants. In plants of conventional design a retention period of 3-3½ hr is required for sedimentation.

RRL, JAMMU

Tetraploid Garlic—Garlic (*Allium sativum*) since its domestication has been diploid (2n=16). Investigations carried out at the Laboratory have shown that the diploidy can be broken by injecting separated cloves of the local variety with aqueous solution of colchicine. The tetraploid plants (2n=32) produced by this treatment are larger and more robust than the diploids.

Sponsored Research

Development of Venturimeters and Orificemeters—Venturimeters (conical type) and orificemeters (carrier ring type) for 6 in. mains have been designed to cover the area ratios 0.0625–0.5020 and 0.1111-0.5320 respectively. A universal manometer to serve as a suitable flow indicator has also been developed.

The meters have been tested in the universal hydraulic test rig constructed for testing pumps, turbines and flow meters. The results show that the coefficient of discharge in venturimeters increases with the increase in area ratio, in orificemeters the coefficient of discharge increases up to an area ratio of 0.34 and then decreases with the increase in area ratio. In venturimeters, the coefficient of discharge remains the same for all Reynold's numbers; in orificemeters, the value increases slightly at lower Reynold's numbers.

The losses in both meters increase with decrease in area ratio. The ratio of orificemeter loss to venturimeter loss varies from 3 to 4 at an area ratio of 0.5 and 0.1 respectively —R. K. K. R. Govindarajan & P. Radhakrishnan, P.S.G. College of Technology, Coimbatore

Dichlorodiethyl Ether—A continuous process has been developed for the production of β, β'-dichlorodiethyl ether starting from ethylene and chlorine. The chemical is widely used in industry as high temperature solvent, pesticide and in the preparation of surface active agents and synthetic rubbers.

The process (Indian Pat. 71169) consists in reacting the two gasses in the presence of water to produce ethylene chlorohydrin which serves as reaction medium for the formation of β, β'-dichlorodiethyl ether by further reaction with ethylene and chlorine. The reaction is carried out at room temperature (20–40°C.) and at atmospheric pressure.

The effect of variables like ethylene chlorohydrin concentration, acidity and ethylene to chlorine mole ratio have been studied. Under optimum conditions the process can be run continuously with practically no loss of ethylene chlorohydrin from the reaction medium. The yield of chemical is 80 per cent on the basis of ethylene used. A small amount of ethylene dichloride is obtained as by-product—C. D. Anand, (Mrs.) K. Kathpalia & N. R. Kuloor, Shri Ram Institute for Industrial Research, Delhi.

Dielectric Properties of Liquids—Dielectric constant and dielectric loss of pure polar liquids at 3.0, 1.25 and 0.8 cm. wavelengths has been measured by microwave reflectometers with high directivity, high coupling ratio directional couplers designed and constructed at the Laboratories. These reflectometers have been standardized with pure benzene, ethyl ether and methyl alcohol at 25°C.

Measurements have been made on diethylamine and triethylamine at 3.0 cm. and at various temperatures. Measurements have also been made on ethyl ether, benzene and methyl alcohol at room temperature and at various frequencies. The complex dielectric constants of diethylamine and triethylamine at 3 cm. wavelength and 24°C. has been found to be 3.6926—*J* 0.6200 & 2.4696—*J* 0.2266 respectively—Prem Swarup, Institute of Applied Physics, Allahabad University, Allahabad.

* * *

Consequent on the appointment of Dr. B.R. Seshachar as Head of the Department of Zoology, Delhi University, Delhi, the research scheme *Cytochemical investigations and enzymes systems in Ciliate Protozoa* has been transferred from the Central College, Bangalore to Delhi University, Delhi.

Research Papers

The behaviour of pyro-and tripolyphosphate complexes at the dropping mercury electrode—P.R. Subbaraman & P.S. Shetty, NCL, Poona. *Analyt. chim. acta*, **22** (1960), 495-97.

Corrosion of nickel coated mild steel—B.C. Banerjee, NCL, Poona. *J. electrochem. Soc.*, **107** (2) (1960).

Light scattering by anisotropic inhomogeneities in thin polymer films under strain—H.L. Bhatnagar, NCL, Poona. *J. chem. Phys.*, **32** (1960), 674-76.

Studies in the family Malpighiaceae—I : Morphology of thryallis glauca kuntze—Bahadur Singh, NBG, Lucknow. *Hort Adv.*, **3** (1960), 1-49.

More unrecorded hosts of dendrophthoe falcata (L. F.) Ettings—Bahadur Singh, NBG, Lucknow. *Hort. Adv.*, **3** (1960), 131-34.

The decidous forests of Coorg district—R.K. Arora, Central Botanical Laboratory, Allahabad. *Proc. Indian Sci. Congr.*, 1960, pt. III, 423.

Ecology of xylia xylocarpa taub—R.K. Arora, Central Botanical Laboratory, Allahabad. *Indian For.*, **86** (1960), 306-313.

A graphical method of determining optimum operating conditions for washing mixed coals—G.G. Sarkar, S. Sakha & A. Lahiri, CFRI, Jealgora. *J. Inst. Fuel*, **33** (1960), 145-50.

On the friability of some Indian coals—L.C. Roy & A.K. Moitra, CFRI, Jealgora. *J. Mines Metals & Fuels*, **8** (4) (1960), 1-8.

PATENTS & PROCESSES

Applications Filed

India

71944 : *Improvements in or relating to the manufacture of phenylacetic acids*—Syed Husain Zaheer, Baldev Singh, Bharat Bhusan, S.I. Ahmed, I.K. Kacker, V. Krishnamoorthy & M.Z. Ahmed, RRL, Hyderabad.

71979 : *An improved process for the manufacture of monoglycerides*—R.K. Kochhar & R.K. Bhatnagar, Shri Ram Institute for Industrial Research, Delhi.

Applications Accepted

65440 : *A process for the extraction of wax from sisal waste*—S.M. Shah, V.K. Hinge, V.V. Mhaskar & R.C. Shah, NCL, Poona.

65611 : *A filter for calibrating the wavelength scales of optical instruments such as the spectrophotometer*—Indra Sanghi & N. V. Parthasarathy, CECRI, Karaikudi.

65780 : *Improvements in or relating to evaporated metal coatings particularly suited for optical elements*—P. Hariharan, NPL, New Delhi.

Application Sealed

64366 : *Developments in or relating to the production of oils and fats having materials for detecting their adulteration and preservation against spoilage*—B.S. Joshi, NCL. Poona.

Processes Leased Out

The following processes developed at the national laboratories mentioned have been leased out for commercial exploitation :

1. Improved vacuum tester for canned foods (Indian Pat. 63659) CFTRI, Mysore—M/s. *Gardners Corporation*, New Delhi.
2. Improved graphite crucibles—Clay bonded (Indian Pat. 62352), NML, Jamshedpur—M/s. *Indian Graphite Industries*, Vijayawada.

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R. N. 4212/57

CSIR NEWS

VOL. 10 NEW DELHI—JULY 25, 1960 : SRAVANA 3, 1882 [illegible]/5/8/60. No. 14

Prof. M.S. Thacker

Prof. M.S. Thacker, Secretary, Ministry of Scientific Research & Cultural Affairs and Director - General, Scientific & Industrial Research, has been elected Chairman of the *Commonwealth Scientific Committee* for the next term beginning from Jan. 1, 1961. The Committee was formally constituted in 1958 to maintain and increase scientific collaboration within the Commonwealth countries by arranging informal meetings of the heads of national research organizations. The meetings provide opportunities for critical evaluation and exchange of views which stimulate new ideas for vitalising and improving the framework of scientific cooperation.

The Commonwealth Scientific Committee has accepted the invitation from the Government of India to hold its next meeting in India.

CFTRI MEETING

A meeting of the Executive Council of the Central Food Technological Research Institute, Mysore, will be held in the Institute on Aug. 14, 1960 at 10.00 a.m. Shri B.D. Jatti, Chief Minister of Mysore and Chairman of the Executive Council will preside.

PERSONAL

- Sarvashri J.S. Gadgil and I.P. Bahri have been appointed, on promotion, Junior Scientific Officers, CPHERI, Nagpur, with effect from June 27, 1960.

- Shri Y. S. Murthy has been appointed Junior Scientific Officer, CPHERI, Nagpur, with effect from June 3, 1960.

* * *

- Shri R. K. Dubey, Junior Scientific Officer, NML, Jamshedpur, after completion of his training in *Operation and Control of Electric Arc Furnaces for Production of Alloy Steel* in U.K. under the Colombo Plan returned to India and resumed duty with effect from June 15, 1960.

- Shri D. R. Narhari, Junior Scientific Officer, CBRI, Roorkee, who had been to U.K. for higher studies under the Colombo Plan, resumed duty on June 17, 1960. He studied at the Birmingham University and obtained the M.Sc. Degree in Foundation Engineering. He also worked at the Building Research Station, Garston.

*Dr. R.N. Sur, Junior Scientific Officer, CDRI, Lucknow, who had been on deputation to U.K. under the Colombo Plan returned to India and resumed duty. Dr. Sur worked at the University of Glassgow on *Detection of antibodies against drugs by haemagglutination test* and completed the certificate course in *Radioisotopes* at the Isotope School, Wantage.

Seminar on Castor Seed and its Products

A two-day seminar on Castor Seed and its Products will commence at the Regional Research Laboratory, Hyderabad, on August 11, 1960. Prof. M.S. Thacker, Director-General, Scientific & Industrial Research, has kindly consented to inaugurate the seminar.

The discussions will be held under the following heads : (i) Castor oil—Uses in India and other countries; and (ii) Castor oil—Research possibilities (Chairman : Dr. J.G. Kane) ; (iii) Castor milling practices and uses of by-products (Chairman : Dr. J.S. Badami); and (iv) Castor quality, price structure and export (Chairman : Dr. R. Sankaran).

* * *

- Dr. J. W. Whitaker, Director, CMRS, Dhanbad, has been nominated a convener of the Exploratory Committee constituted by the Indian Standards Institution to examine and recommend the items of mining and allied equipment that could be taken up for formulation of Indian Standards.

CSIR NEWS will henceforth be published on the second and fourth Monday every month.

- Dr. S. Husain Zaheer, Director, RRL, Hyderabad, has been nominated a Director of the Board of Management of the *Mining and Mineral Products Corporation*, Jammu & Kashmir State.

- Dr. K. N. Mathur, Director, CSIO, New Delhi, has been nominated a member of the Development Council for *Bicycles, Sewing Machines and Instruments*, Union Ministry of Commerce & Industry.

- Dr. V. Subrahmanyan, Director, CFTRI, Mysore, has been nominated a member of the *Horticulture Development Board*, Indian Council of Agricultural Research.

- Dr. N.G. Basak, Asst. Director, CFRI, Jealgora, has been nominated a member of an Expert Committee of the Eastern Regional Committee of the All-India Council of Technical Education to examine (i) the scheme for modernization of degree courses in Chemical Engineering at Jadavpur University and (ii) the proposal for opening courses in Fuel Technology and Petroleum Technology as special elective subjects in M.Sc. (Tech.) Applied Chemistry at the University College of Technology, Calcutta University.

- Shri G. S. Ramaswamy, Asst. Director, CBRI, Roorkee has been nominated a member of the *Functional Criteria for Design of Structures Sub-Committee* of the Indian Standards Institution.

* * *

- Shri B.N. Bose, Senior Scientific Assistant, CFRI, Jealgora, has been elected an Associate Member of the *Institute of Fuel, U.K.*

(*Contd. on page 2, col. 3*)

BRIEFS

Indian Essential Oils—A Review

This 90-page publication (Author, Shri A.K. Menon, Ex-chairman, CSIR Essential Oils Research Committee), just published, reviews the present position of Indian essential oil industry and takes stock of the research advances in the field of essential oils and aromatic chemicals during the past few years. The notes on essential oils include : Occurrence, methods of distillation, properties and yield, grades, trade and uses. The notes deal with 26 essential oils (agar, ajowan, Bellary leaf, camphor, cananga, cinnamon leaf, citrus, cyperus, davana, dill, eucalyptus, geranium, jasmine, khus, lavender, lemongrass, linaloe, mint, ocimum, palmarosa, gingergrass, patchouli, rose, sal resin, sandalwood and turpentine), 6 spice oils (clove, ginger essence, oleo-resin, pepper, cardamom and nutmeg) besides attars, natural isolates and aromatic chemicals.

The publication also contains a bibliography of research papers (575 papers pertaining to 163 essential oil bearing plants), monographs and reports on essential oils and related products resulting from the research work carried out in India. List of schemes sanctioned by the CSIR Essential Oils Research Committee at various centres and statistical data on the production, import, export and consumption of oil and oil bearing products are included in the appendices.

Research Fellowships

The following have been awarded *CSIR Fellowships* for research on projects noted against their names :

Senior Fellowships

1. Shri K.C. Padmanaban—*Chemistry of Indian plant resins* (Bose Institute, Calcutta).

2. Shri A. Sambasiva Rao—*Pilot plant preparation of ethylene oxide and its products* (Indian Institute of Science, Bangalore).

Junior Fellowship

Shri Vijay Kumar Sharma—*Investigation of families and genera of disputed systematic position* (Regional Botanist, Botanical Survey of India, Dehra Dun).

The news item pertaining to RRL, Hyderabad published in *CSIR News*, Vol. 10, No. 9 (p. 2, col. 2) should read as follows :

The Regional Research Laboratory, Hyderabad has been recognized as a Research Centre for conducting research for postgraduate degrees in science and technology by the following universities : Andhra, Aligarh, Annamalai, Banaras, Baroda, Calcutta, Gujrat, Kerala, Madras, Mysore, Osmania, Poona and Utkal.

RESEARCH PAPERS

Equation of sky component with a C.I.E. standard overcast sky—T.N. Seshadri, CBRI, Roorkee. *Proc. Indian Acad. Sci.*, **51** (1960), 233-42.

Thermal diffusivity of a roof-slab from *in-situ* temperature measurements—B.C. Raychaudhuri, CBRI, Roorkee. *Proc. Indian Acad. Sci.*, **51** (1960), 258-64.

In situ measurement of moisture contents—V. S. Agarwal, CBRI, Roorkee. *Indian and Eastern Engineer*, **102** (1960), 321-23.

Acoustics of an auditorium—V. Narasimhan, CBRI, Roorkee. *Indian Builder*, **8** (2) (1960), 35-37.

Medicinal plants of the arid zones wth particular reference to the botanical aspect—I.C. Chopra, B.K. Abrol & K.L. Handa, RRL, Jammu, *UNESCO Arid Zones Res. Series*, XIII (1960).

(*Contd. from page 1, col. 3*)

Dr. S.C. Datta

Dr. S.C. Datta, M.Sc. and D. Phil. (Calcutta), D.Sc. (Pennsylvania), Pharmacognocist, Central Drugs Laboratory, Calcutta has been appointed Asst. Director, CIMPO, New Delhi, with effect from July 4, 1960.

Dr. Datta (*b.* Calcutta 1916) has published more than 40 papers in the field of botany, pharmacognosy, pharmacology, pharmaceutical chemistry and cultivation of medicinal plants and is an author of two books pertaining to the pharmacognosy of Indian root, rhizome and leaf drugs published by the Union Ministry of Health. He is associated with various technical committees and learned societies in India and abroad including World Health Organization, Advisory Committee on International Pharmacopoeia and Pharmaceutical Preparation, and Indian Pharmacopoeia Committee.

Dr. P.M. Wagle

Dr. P.M. Wagle, M.D. (Bombay), D.P.H. (London), D.T.M. (Liv.), D.B. (Manch.) has been appointed Officer-on-Special Duty, CPHERI, Nagpur, with effect from March 10, 1960.

A specialist in bacteriology with particular reference to investigation of epidemic diseases, vaccine manufacture and water bacteriology. Dr. Wagle has been associated with different technical and special committees constituted by State and Central Governments and the Indian Council of Medical Research.

PATENTS & PROCESSES

Applications Filed

71818 : *Manufacture of water soluble sodium carboxy alkyl cellulose*—V.B. Chipalkatti, S.K. Manivanan & H.R. Chipalkatti, Shri Ram Institute for Industrial Research, Delhi.

72407 : *A process for the production of terpineol and terpin hydrate*—S.J. Hasan, Bharat Bhusan & S.H. Zaheer, RRL, Hyderabad,

72408 : *A process for separation and isolation of the aromatic principles of Abelmoschus moschatus seeds*—G. Misra, V. N. Sharma, C. R. Mitra & K.N. Kaul, NBG, Lucknow.

72425 : *A direct process for preparing the chlorides of barium and strontium from their sulphate minerals*—S. H. Iqbal, J. Lobo & J. Gupta, NCL, Poona.

72444 : *Antimony-free white enamels*—Atma Ram & S.S. Varma, CGCRI, Calcutta.

Applications Accepted

66295 : *Improvements in or relating to electronic receiving equipment using valves and transistors as linear circuit elements*—M.V. Joshi & T.V. Ramamurti, NPL, New Delhi.

66296 : *Improvements in or relating to stabilization of bandpass characteristics of transistor high frequency amplifiers*—M. V. Joshi & T. V. Ramamurti, NPL, New Delhi.

66297 : *Improvements in or relating to transistorised receiving equipment*—M.V. Joshi & T.V. Ramamurti, NPL, New Delhi.

RESEARCH IN PROGRESS

National Laboratories

NML, JAMSHEDPUR

Manganese Carbonate from Low-Grade Manganese Ores—A process for producing pure manganese carbonate from different low-grade Indian manganese ores, which are not easily amenable to physical methods of beneficiation, has been developed. The process is based on the fact that whereas manganous oxide obtained by reducing manganese ores is soluble in an aqueous solution of ammonia containing ammonium carbonate, most of the impurities are insoluble. Manganese carbonate is obtained from the leached solution by heating at 60-70°C. Ammonia and carbon dioxide recovered during heating can be stored and reused.

Manganese carbonate is the basic chemical for producing various manganese salts. Besides, it is used for the manufacture of battery active manganese dioxide and for the regeneration of spent liquor (containing manganese sulphate) in the electrolytic cells for producing manganese metal.

CFRI, JEALGORA

Fluidized Carbonization of Coal—Non-coking slack coal (size, 1 in.) is mainly used for power generation, brick and cement industries, and for steam-raising. Investigations in progress for finding a better use of slack coal have resulted in the development of a continuous process for low-temperature fluidized carbonization whereby char, tar and gas could be obtained. In the process, preheated air is used as fluidizing medium and the heat of carbonization is mainly obtained by combustion of a part of the coal with air inside a tubular carbonizer, provided with a suitable condensing system to recover the by-products.

Semi-pilot plant experiments have been carried out with high volatile non-coking Jambad-Bowlah coal (carbon, 63.45; V.M., 34.5; F.C., 45.3; and, ash 12.4 per cent) of size—30+100 mesh B.S. The average yield of tar obtained is about 8 per cent of the coal charged; at a given air-to-coal ratio it increases with the temperature of carbonization. The yield of char varies from 65 to 74 per cent and that of nitrogen-free gas is about 1.5 cu. ft. per lb. of coal—S.K. Mukherjee, M. Sen, A.K. Das Gupta & A. Lahiri.

CGCRI, CALCUTTA

Alumina Enamel Stains and Ceramic Colours—An imported material, tin oxide, has been in use as a stabilizer in many enamel stains and ceramic colours. Its use, therefore, involves disadvantages like uncertainty regarding availability, and high and widely fluctuating price.

Investigations carried out for replacing tin oxide by cheaper materials in lead-antimony yellow stains have shown that it is possible to substitute it by alumina added in the form of alum. Enamel stains and overglaze ceramic colours made by using this substitute have proved to be satisfactory on test.

CECRI, KARAIKUDI

Diaminophenol from *m*-Dinitrobenzene—A new technique—Dual Cathode Technique—has been evolved for the electrolytic reduction of *m*-dinitrobenzene to 2:4 diaminophenol. The method consists in electrolytic reduction of *m*-dinitrobenzene using amalgamated monel cathode by passing 4 F. current for every g. mol. of *m*-dinitrobenzene, replacing monel cathode by pure copper, and completing the reduction by passing 6 F. current. Replacement of monel cathode by copper cathode at the stage of change of cathode potential increases the yield of 2:4 diaminophenol. The technique also holds out good promise for the controlled reduction of other polynitro compounds—K. S. Udupa, G. S. Subramanian & H. V. K. Udupa.

RRL, HYDERABAD

Kitchenware Enamels—Porcelain enamel compositions have been developed using titanium oxide as opacifying agent instead of imported tin oxide. The compositions possess satisfactory adherence, glossiness, reflectance, acid and thermal shock resistance.

These enamels are better for application in thinner coatings than conventional tin oxide bearing enamels; the quantity of enamels required for coating sheet irons is comparatively less.

Mechanism of Synergism—The effect of addition of piperonyl butoxide to malathion—a potent insecticide—has been studied. Piperonyl butoxide antagonises the action of malathion, whereas synergism is observed between it and irradiated malathion. On irradiation, malathion appears to be converted to a more active inhibitor of cholinesterase 'Malaoxon'—a

Bed Sediment Sampler designed and constructed at the Irrigation and Power Research Institute, Amritsar thiophosphate analogue of malathion. Malaoxon appears to be primarily responsible for the toxic action of malathion in insects in similar way as paraxon accounts for toxic effect of parathion.

IIBEM, CALCUTTA

Metabolic Experiments with Vibrio cholerae—Presence of full pentose phosphate cycle in cell-free extracts of *Vibrio cholerae* has been demonstrated. Both glucose-6-phosphate and 6-phosphogluconate dehydrogenases have been shown to be TPN specific. On incubation of cell-free extract with ribose-5-phosphate, a ketopentose, ketoheptulose and ketohexose have been formed.

The cell-free extract of *V. cholerae* contains a strong sucrose splitting enzyme with hydrolytic action. The enzyme is inactivated by —SH inhibitors and the inhibition can be reversed by cysteine or glutathione. Anions like sulfate, pyrophosphate and borate activate the enzyme activity—D. HALDAR, B. GHOSH & A.N. CHATTERJEE.

RRL, JAMMU

Harvesting of Dill Fruit—Studies on different stages of maturity of dill fruits have revealed that optimum time of harvesting the fruits is when they are fully matured but green in colour. If the harvesting is delayed till the fruit develops grey colour, as it is conventionally done, about 30-40 per cent of the fruit is shed resulting in considerable loss in yield per acre.

Sponsored Research

Jute Laminates—Factors influencing the strength of laminated boards prepared from jute fabrics and water-soluble phenol-formaldehyde resin have been examined. Removal of batching oil from the fabric, incorporation of wetting agent in the resin solution as also the use of phenol-formaldehyde resin in the early stages of polymerization have been found helpful in improving the physical properties of the boards. Use of jute yarn, jute sliver and raw jute in place of jute fabric has yielded better results. The presence of twist and crimpiness in jute fabric hampers greatly the development of full potential strength of jute laminates—I. B. CHAKRAVARTI & D. N. BHATTACHARYYA, Indian Jute Mills Association Research Institute, Calcutta.

Bed Sediment Sampler—A pressure difference type bed sediment sampler (Fig. at page 3) for directly measuring the bed load movement in streams has been designed and constructed. The sampler (3.1in. × 1.5 in.) has a stream line shape with exit elevated. A deflecter with slot of $\frac{3}{4}$ in. × $\frac{11}{40}$in. arranged in three rows is used in the sampler to check the entrapped sediment in place of the mesh used in conventional designs. The optimum time period of sampling of the sampler is 30 min. with 90 per cent efficiency, the efficiency does not vary much with the increase in the velocity of stream—H. L. UPPAL & T. C. PAUL, Irrigation and Power Research Institute, Amritsar.

Acid Metabolism in Plants—Methods have been developed for the isolation, characterization and estimation of tartaric acid from tamarind leaves employing ion-exchange technique and paper chromatography. Analysis of leaves, buds and flower and young fruits collected in October and November have shown that tartaric acid is the most dominating acid in all these parts. The acid from leaves, flower and buds give the metavanadate positive test while the acid obtained from the young fruits give a metavanadate negative test. This suggests that possibly in the young fruits the inactive form of tartaric acid, i. e. the mesotartaric acid, dominates while the active form is present in leaves, buds and flowers.

In leave and fruit samples collected in February and March, the tartaric acid content increased tremendously; other acids like malic, citric, succinic and oxalic accumulated in both leaves and in fruits. Only malic acid is present in traceable amounts in the October and November samples, but the samples taken in March showed as broad a band for malic acid as for tartaric acid. The acid extracted from old fruits give a metavanadate positive test indicating that the active form of acid dominates in old fruits—SHRI RANJAN, Allahabad University Allahabad.

Chemical Carcinogenesis—A series of compounds identical to the hydrocarbons, dibenzanthracene, benzphenanthrene, chrysene and benzpyrene have been tested for their carcinogenicity by two standard techniques, namely cutaneous application and subcutaneous injection, on about 800 Swiss strain mice. Test results have indicated that besides the active K-region, reactivity at other positions, particularly L-region, is also of significance in determining the relationship between the chemical structure and carcinogenicity.

The effects of the treatment on organs like ovaries, adrenals and uterus were carefully examined histopathologically for macroscopic and microscopic changes in their structures. The study indicates that some of the compounds have hormone-mimetic action and their treatment accelerates the cystic condition of the ovary. Similar conditions developed on treatment with simple compounds like solid thiophthene—V.R. KHANOLKAR, S.S. WARAVDEKAR & N.A. SHETH, Indian Cancer Research Institute, Bombay.

INDIAN ESSENTIAL OILS - A REVIEW

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CSIR NEWS

VOL. 10 NEW DELHI—AUGUST 8, 1960 : SRAVANA 17, 1882 No. 15

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MEETINGS OF CSIR RESEARCH COMMITTEES AND EXECUTIVE COUNCILS

CSIR Research Committees

Pharmaceuticals & Drugs Research	Aug. 10, 1960	CDRI, Lucknow, 10.00 a.m. Chairman : Dr. K.A. Hamied
Chemical Research	Aug. 17, 1960	CFTRI, Mysore, 10.00 a.m. Chairman : Dr. B.C. Guha
Physical Research	Aug. 29, 1960	CSIR Secretariat, New Delhi, 10.00 a.m. Chairman : Dr. Vikram A. Sarabhai

Executive Councils of National Laboratories

CECRI, Karaikudi	Aug. 22, 1960	CLRI, Madras, 2.00 p.m. Chairman : Shri C. Subramanian
CRRI, New Delhi	Aug. 29, 1960	CRRI, New Delhi, 11.00 a.m. Chairman : Prof. M.S. Thacker

Symposium on Electrical Machine Design

A symposium on Electrical Machine Design will be held at the P. S. G. College of Technology, Peelamedu (Coimbatore) during the fourth week of October 1960. The symposium, sponsored by the CSIR Electrical and Mechanical Engineering Research Committee will cover the following aspects: (1) Materials; (2) Thermal Problems, (3) Construction Techniques; (4) Field Approach to the Design Problems; (5) Optimisation and Optimum Design; (6) Effect of Prime-mover Characteristics on the Design of Alternators; (7) Model Theory; (8) Speed Control; (9) New Energy Conversion Devices from Non-conventional Methods; and (10) Other Related Topics.

Intending contributors are requested to send their papers along with abstracts (*c.* 200 words each) to Dr. G.R. Damodaran, Principal, P. S. G. College of Technology, Peelamedu, before Sept. 30, 1960.

Seminar in Electrochemistry

A seminar in Electrochemistry will be held at the Central Electro-Chemical Research Institute, Karaikudi, some time during the fourth week of December 1960. Problems and recent advances in the field of fundamental and applied electrochemistry, including electrochemical process industries and operation of electrochemical plants will be discussed.

Those interested in participating in the seminar are requested to send abstracts of their papers (*c.* 300 words each) in triplicate to the convener, Dr. H. V. K. Udupa, Assistant Director, Central Electro-Chemical Research Institute, Karaikudi, by Oct. 15, 1960, Full papers in duplicate may be sent so as to reach the convener by Nov. 15, 1960.

Prof. M.S. Thacker

Prof. M. S. Thacker, Director-General, Scientific and Industrial Research, returned to New Delhi on Aug. 7, 1960 after the completion of his 6-week tour of Europe (France, U.K., West Germany and Switzerland).

PERSONAL

● Drs. M.M. Dhar, V.C. Vora, K. Bhaskaran, S.K. Mukherjee and G.K. Ray have been appointed, on promotion, Senior Scientific Officers : Grade I, CDRI, Lucknow, with effect from July 18, 1960.

● Drs. S.P. Popli and R.P. Rastogi have been appointed, on promotion, Senior Scientific Officers: Grade II, CDRI, Lucknow, with effect from July 18, 1960.

● Sarvashri V.A. Krishnamurthy, J.N. Bhowmik, C.S.B. Nair, S.P. Nandi, S.S. Chowdhury & H.C. Chakravarti have been appointed, on promotion, Senior Scientific Officers : Grade II, CFRI, Jealgora, with effect from July 6, 1960.

● Sarvashri A.K. Dutta & M.S. Bawa have been appointed, on promotion, Senior Scientific Officers: Grade II, CFRI, Jealgora, with effect from July 18 and July 26, 1960 respectively.

● Sarvashri N.C. Ganguli, S.N. Roye, D.D. Basu & S.C. Ghosh have been appointed, on promotion, Junior Scientific Officers, CFRI, Jealgora, with effect from July 6, 1960.

● Smt. Fatima M. Kaiser & Shri A.K. Banerjee have been appointed Junior Scientific Officers, CFRI, Jealgora, with effect from July 12, 1960.

● Sarvashri T. Das Gupta & A.K. Sinha have been appointed, on promotion, Junior Scientific Officers, CFRI, Jealgora, with effect from July 18 and July 22, 1960 respectively.

● Dr. D.S. Bakuni has been appointed Junior Scientific Officer, NBG, Lucknow, with effect from June 21, 1960.

● Shri G. Devadoss has been appointed Junior Scientific Officer, CPHERI, Nagpur, with effect from July 20, 1960.

● Dr. S.N. Kulkarni joined NCL, Poona, as Pool Officer, with effect from July 1, 1960.

● Shri G.M. Maitra joined CMERI, Durgapur, as Pool Officer, with effect from July 13, 1960.

● Dr. S. V. Ganapati, Officer-in-charge, CPHERI Field Centre, Delhi, has been transferred to the CPHERI, Nagpur. Dr. Ganapati took charge of his duties on July 25, 1960.

● Dr. Bhola Nath, Senior Scientific Officer, NCL, Poona, was relieved of his duties on July 7, 1960.

* * *

● Dr. K. Venkataraman, Director, NCL, Poona, will leave for Australia on Aug. 10, 1960 for participating in the International

(*Contd. on p. 2, col. 2*)

BRIEFS

Burmah-Shell and Assam Oil Scholarships

The Council of Scientific & Industrial Research has selected the following ten candidates for the award of the *Burmah-Shell* and the *Assam Oil Company* Scholarships for research and training in U.K. during the session commencing October 1960.

Burmah-Shell Scholarships :

1. Shri K.V.V. Satyanarayan Murthy—*Petroleum Engineering.*
2 & 3. Sarvashri S.K. Ray & G. B. Ganapathiraman—*Fuel Technology.*

Assam Oil Scholarships :

1. Shri A. L. Ramachandra Rao—*Metallurgy and Foundry Practice.*
2 & 3. Sarvashri K.C. Sahu & C.C. Bhattacharjee—*Geology and Geophysics.*
4 & 5. Sarvashri K.D. Kini & P.C. Datta—*Chemical Engineering.*
6 & 7. Sarvashri I.S. Samar & J. Kumar—*Mining Engineering.*

Admission for the scholars are being arranged in British universities through the Indian High Commission in U.K.

Research Fellowships

The following have been awarded CSIR Fellowships for research on projects noted against their names :

Senior Fellowship :

Shri V. Ramakrishnan—*Ultimate strength of reinforced concrete, etc.* (P.S.G. College of Technology, Coimbatore).

Junior Fellowship :

Shri S.C. Jamdar—*Role of riboflavin in the synthesis and regeneration of haemoglobin, plasma and liver proteins and enzymes* (University Department of Biochemistry, Nagpur).

Research Schemes Terminated

The following research schemes have been terminated with effect from the date noted against them.

1. *Production of antibiotic substances by Streptomyces* Spp.—Dr. P. Nandi, Bose Institute, Calcutta : August 31, 1960.
2. *Algal research*—Prof. M.O.P. Iyengar, Madras University, Madras: June 30, 1960.

PERSONAL

(*Contd. from p. 1, col. 3*)

Symposium on *Chemistry of Natural Products* (Aug. 15 to Aug. 25). Dr. Venkataraman will also visit CSIRO Laboratories in Australia and is expected to return to Poona on Sept. 1, 1960.

- Dr. S.C. Bhattacharyya, Asst. Director, NCL, Poona, will leave for Australia on Aug. 8, 1960 for a period of about a fortnight for attending the International Symposium on *Chemistry of Natural Products.*

- Shri S. Chatterjee, Asst. Director, CFRI, Jealgora, returned to India on July 18, 1960, after completion of his training in France, in coking and coal washing plants. Shri Chatterjee visited France under the Indo-France Technical Cooperation Agreement.

- Shri G.G. Sarkar, Senior Scientific Officer, CFRI, Jealgora, who visited Poland and Yugoslavia as a member of a technical delegation, sponsored by the Ministry of Steel, Mines & Fuel, for studying the possibility of procuring coal mining and coal preparation machinery, returned to Jealgora on July 18, 1960.

* * *

- Dr. K. Venkataraman, Director, NCL, Poona, has been elected a member of the *German Academy of Natural Products Investigators* for his contributions to the advancement of natural sciences. The German Academy is the oldest learned society in the world devoted to natural sciences.

- Dr. Atma Ram, Director, CGCRI, Calcutta, has been nominated a member of the *Heavy Industries Advisory Committee* constituted by the Government of Uttar Pradesh.

- Dr. A. Lahiri, Director, CFRI, Jealgora, has been nominated a member of the Advisory Committee on Power Research constituted by the Central Board of Irrigation and Power.

- Dr. Y. Nayudamma, Director, CLRI, Madras, has been nominated a member of the Committee to advise on the establishment of Research Institute of the Khadi & Village Industries Commission.

- Dr. Y. Nayudamma, Director, CLRI, Madras, has been nominated a member of the Senate of the Madras University.

- Dr. Ram Pershad, Asst. Director, NPL, New Delhi, has been nominated a member of the *Defence Electronics Research Committee*, Ministry of Defence.

- Dr. D. Kanungo, Senior Scientific Officer, CMRS, Dhanbad, has been appointed a member of the Board of Studies for Geology and Mineralogy, Utkal University for 1960-61.

* * *

- Dr. Sukh Dev, Asst. Director, NCL, Poona, has been awarded the D.Sc. degree by the Indian Institute of Science, Bangalore, for his thesis, *Some Studies in Azulenes, Terpenes and Related Topics.*

Research Papers

Use of organic reagents in inorganic analysis—Part X : Determination of thorium with maleanilic acids—S.K. Datta, Victoria College, Coochbehar. *Z. anal. chem.*, **174** (1960), 23.

Use of organic reagents in inorganic analysis—Part XI : Gravimetric determination of zirconium with maleanilic acids—S.K. Datta, Victoria College, Coochbehar. *Z. anal. chem.*, **174** (1960), 30.

Analytical aspects of some azo dyes from chromatropic acid—Part X : Analytical reactions of some dyes from sulphonamides—S.K. Datta & S.N. Saha, Victoria College, Coochbehar. *Z. anal. chem.*, **174** (1960), 38.

Fluorescence spectra of solutions of uranyl nitrate at liquid air temperature—Part I : Rapidly cooled solutions—D.D. Pant & D.P. Khandelwal, D.S.B. College, Nainital. *Proc. Indian Acad. Sci.*, **51A** (1960), 60-74.

Force constants for unlike molecular interaction on exp-six model from inter-diffusion—R. Paul, *Indian J. Phys.*, **34** (1960), 141-46.

Studies on the operation of a 2 T.P.H. heavy medium drum washer—A.G. Saha, D. Basu, A.K. Chakravarti, G.G. Sarkar & A. Lahiri, CFRI, Jealgora. *J. Mines, Metals & Fuels*, **8** (5) (1960), 10-15.

RESEARCH IN PROGRESS

National Laboratories

CFRI, JEALGORA

Fischer-Tropsch Synthesis—Production of synthetic oil by the Fischer-Tropsch (F.T.) process using synthesis gas and an iron catalyst (Fe, Cu, MgO & K_2O) developed at the Institute has been under study in a fluidized bed.

The study has been carried out on a semi-pilot plant scale in 2 in. diam. fluidized reactor. Maximum oil formation with the minimum of undesirable products, viz. CO_2, H_2O and CH_4, has been observed under the following conditions: H_2O: CO in synthesis gas, 1.35-1.9; catalyst size, 72-120 mesh B.S.; temperature, 300°C.; linear velocity of gases, 10-20 cm./sec.; pressure, 7.8 atm.; and space velocity, 600-1200—N. G. Basak, S. R. Srinivasan, V. A. Krishnamurthy, A.C. Majumdar & A. Lahiri.

Correlation of Properties of Coal and Coke—A statistical study of the data obtained by laboratory and pilot oven coking tests on coals and their blends has been carried out with a view to correlate their different properties using the regression analysis techinque. Two relationships (one linear and the other quadratic) between the Coking Index and some of the physical properties (Shatter Index & Micum Index) have been established. The second degree equations of these relationships show narrow deviation of the observed values from the expected values.

A study of the coefficient of correlation of 'fusible' and 'inert' constituents of coal (F.C. & I.C.) with volatile matter (V.M.) shows that there is a remote relationship between F.C. & V.M. and a close relationship between I.C. & V.M.

Similar equations denoting the relationship between F.C. and I.C. of coal with Shatter and Micum Indices reveal that fusible constituents fail to give any clue to its coking properties whereas inert constituents can be utilized to predict Shatter and Micum Indices of coke with a fair degree of accuracy. No relationship has been found between plastometric and dilatometric properties of coals and the strength of their cokes—N.C. Sinha, B.K. Sinha, A. K. Roy Chowdhury, J.M. Sanyal, N. N. Das Gupta & A. Lahiri.

CGCRI, CALCUTTA

Indian Mica—Dielectric properties such as d.c. resistivity, power-factor permittivity and loss-factor for ruby clear mica from Bihar and green clear mica from Madras have been studied up to 400°C.; in the case of power-factor, measurements have been carried out at 1.05 m.c./s. with the samples preheated to different temperatures up to 700°C. Differential Thermal Analysis (DTA) of the samples have also been carried out.

The study reveals that there is a definite transition temperature (175°C.) for ruby mica which is absent in green mica. Below 175°C. ruby mica undergoes no change in power factor, permitivity and loss factor, whereas these properties decrease uniformly with the increase of temperature for green mica. The change in dielectric properties of ruby mica above 175°C. is similar to that of green mica. Preheating has little effect on the structure of ruby mica up to 550°C. and for green mica up to 600°C., after which both varieties suffer permanent changes in their constitution. A stabler structure for green mica, having the dehydroxylation peak *c.* 30°C. above that for ruby mica, is indicated by DTA.

CDRI, LUCKNOW

Oral Contraceptives — Phasic fertility performance test on male rats injected with cadmium chloride showed that the animals are sterile but the characteristic male sexual behaviour patterns are not impaired. It seems that cadmium chloride produces a state of 'Chemical vasectomy'. The effective dose range for total destruction of the seminiferous epithelium lies between 0.25 mg. to 1 mg. of cadmium chloride per 100 g. body weight.

CRRI, NEW DELHI

Saturation of Subgrades—The degree of saturation of subgrades in the case of flexible pavements in different parts of the country has been determined as a result of a country-wide survey conducted by the Institute. It is observed that even during the wettest season of the year, the subgrade in certain parts of the country does not necessarily get fully soaked and the degree of saturation is as low as 20 per cent. The finding is useful for economising the cost of road construction since the conventional method of designing the thickness of pavement is based on the assumption of a soaked subgrade condition, i. e. 100 per cent saturation.

Sponsored Research

Universal Pitot Tube—A universal type of pitot tube has been designed to record the velocity of flow in open channels and conduits. Tubes of conventional design record the velocity in a direction perpendicular to the face and do not take account the obliquity of flow.

The nozzle conveying static and dynamic pressures is joined to a vertical limb with a mobile joint. The tubes running through it join their counterparts in the vertical limb through rubber tubes. The nozzle can thus move and can be controlled by a fine screw at the top in any angle. The coefficient of velocity of the pitot tube is nearly 1. The instrument has been manufactured, calibrated and supplied to a number of laboratories and research organisations in India—H. L. Uppal & T. C. Paul, Irrigation and Power Research Institute, Amritsar.

Degradation of Jute Fibre by Micro-organisms—Penetration of fibre-lumen in jute by fungi has been investigated. Jute modified by delignification, sun-exposure and alkali treatment is more susceptible to fungal attack. Fungal species ordinarily not penetrating the lumen do not show lumen growth, but penetrate delignified jute. Lumen invasion is not facilitated by pressure digestion of the fibre ; fibres previously treated with cellulase show less lumen growth. Ultimate jute cells prepared by chromic acid treatment are gradually penetrated by all lumen-species.

Addition of jute extract to the usual Czapek-Dox medium, or substitution of the latter by distilled water or sterilized garden soil does not affect lumen penetration.

Of the 14 fungi isolated from naturally damaged fabrics in bales, 11 showed lumen growth, coupled with increased 'damage count' and structural damage. The minimum period required for penetration was usually different with different species and varied between 24-72 hr. In a moist fabric sample kept tightly packed (as in a bale), lumen growth appeared after 22 days. The actual mode of lumen penetration is under investigation.

Structural studies of fibres damaged under different conditions have been carried out. Fungi generally showed damage along the lumen wall, whereas a mixed bacterial inoculum (soil extract) gave heavy surface damage as well as moderate lumen damage. The myxo-bacterium *Sporocytophaga*, which caused heavy damage in mixed culture, failed to grow on jute in pure culture—S. N. Basu & (Miss) R. Ghosh, Indian Jute Mills Association Research Institute, Calcutta.

Oxalic Acid Metabolism—Spinach seedlings grown in dark contain insignificant amounts of oxalate, compared to those grown in light. Plants first grown in light and then transferred to dark show very little alteration in the oxalate content.

The oxalate content of the tubers of *Colocasia* remains fairly constant during storage. However, on sprouting in dark, there is a significant increase in total oxalate content.

There is no marked diurnal variation in the oxalate content of leaves of *Alocasia*. During natural ageing of leaves a considerable reduction in the oxalate content is noticed. There is significant change in the oxalate content on incubation of the homogenates of leaves.

None of the plant homogenates are active with glyoxalate as the substrate for oxalate formation when tested by Warburg's manometric and Thunberg's techniques.

Studies on glyoxalate dehydrogenation show that crude diaphorase preparation from beef heart muscle oxidises cysteine nonenzymically in the Thunberg's system; the factor responsible for this oxidation is heat-stable, nondialysable, TCA-precipitable and is inhibited by glyoxalate and cyanide and to a lesser extent by pyrophosphate—S. K. Srivastava and P. S. Krishnan, Lucknow University, Lucknow.

Black-gram Protein—Studies on the isolation of globulin fractions of black-gram protein and examination of their amino acid composition have been carried out.

Of the four different fractionation methods tried, combined sodium and ammonium sulphate fractionation has been found to be most satisfactory for the isolation of globulin fractions.

Amino acid composition of globulin fractions studied by circular paper chromatography showed that like other leguminous seeds, sulphur-containing amino acids, cystine and methionine, are present in traces while histidine, aspartic acid, glutamic acid and leucines are present to a considerable extent. Lysine, arginine and phenylalanine are also present to a greater extent in the globulin fractions—H. R. Cama and (Miss) Saroj Tawde, Department of Biochemistry, Indian Institute of Science, Bangalore.

Mercaptans and Polymerization—Role of mercaptans as modifiers in emulsion polymerization has been investigated.

n-Octyl and *t*-Octyl mercaptans, used as modifiers in the polymerization of styrene, have been found to function as chain transfer agents at 5°C. At a higher temperature (50°C.), small amounts of mercaptans have an accelerating effect on the rate of emulsion polymerization of styrene, but at 5°C. the rate is unaffected.

The possibility of mercaptans undergoing non-modifying reactions with the monomer has been investigated. With styrene as the monomer no such reaction is observed. With methyl acrylate, however, benzyl mercaptan adds very rapidly to the monomer in emulsion at 45°C., and is quantitatively consumed in less than 5 minutes, without undergoing polymerization.

The reaction kinetics of addition of thioglycolic acid to methyl acrylate at 45°C. in acqueous buffers in the *p*H range 5.9-10.6 indicate that it is of a second order reaction; the rate of reaction increases with the increase of *p*H—P. R. Sinha, M. N. Das & K.L. Mallick, Jadavpur University, Calcutta.

PATENTS & PROCESSES

Application Filed

72639: *A method of making yellow coloured bricks from alluvial soils*—L.C. Jain & P.C. Jain, CBRI, Roorkee.

Application Accepted

66175: *A process for the oxidation of ortho-, meta- and para-xylenes and mixed xylenes to the corresponding tolualdehydes*—H.V. Udupa & M.S. Venkatachalapathi, CECRI, Karaikudi.

Applications Sealed

64541: *A fabricated bamboo structure for use as springs of beams*—V.S. Goel, CRRI, New Delhi.

66194: *Improvements in or relating to can-sealing composition*—D. Raghunath & S.L. Kapur, NCL, Poona.

Process for Free-Flowing Table Salt

Details of the CSIR patented (Indian Patent No. 60556) process for the manufacture of Free-Flowing Table Salt are available to industry free of charge.

The process developed at the Central Salt Research Institute, Bhavnagar claims that starting from solar salt, table salt with best possible free flowing properties can be produced at an estimated cost of 19 np. per lb.

Parties interested in the commercial development of the process may write for details to the Director, Central Salt Research Institute, Bhavnagar.

Process Leased Out

The process for the manufacture of Liquid Gold developed at the National Metallurgical Laboratory, Jamshedpur, has been leased out for commercial exploitation to the following firms: (1) *Ashok Metal Industries Ltd.*, Calcutta; (2) *Vummaidiars (Mfrs) Private Ltd.*, Madras; and (3) *Shri Babubhai D. Mehta*, Baroda.

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LIBRARY

MEETINGS OF EXECUTIVE COUNCILS AND CSIR RESEARCH COMMITTEES

Executive Councils of National Laboratories

RRL, Hyderabad	Sept. 2, 1960	RRL, Hyderabad, 3.30 p.m. Chairman : Shri D. Sanjiviya
IIBEM, Calcutta	Sept. 3, 1960	BITM, Calcutta, 4.00 p.m. Chairman : Dr. B.C. Roy
NCL, Poona	Sept. 10, 1960	NCL, Poona, 11.00 a.m. Chairman : Shri P.A. Narielwala

CSIR Research Committees

Joint Committee of the ICOC and CSIR for Vegetable Oils Research	Sept. 10, 1960	Hyderabad Chairman : Dr.M.S. Randhawa
Physical Research Committee	Sept. 13, 1960	CSIR Secretariat, New Delhi, 10.00 a.m. Chairman : Dr. Vikram A. Sarabhai

Symposia on 'Upper Atmosphere' and 'IGY Data'

Two symposia, one on 'Upper Atmosphere' and another on 'IGY Data' will be held at the National Physical Laboratory, New Delhi, sometime in December 1960. The symposia which are to be held consecutively have been sponsored by the Radio Research Committee of the CSIR and the Indian National Committee for the IGY respectively.

The topics for the symposium on Upper Atmosphere will include : Ionosphere, Arora and Airglow and various aspects of Solar Activity, Geomagnetism, and Cosmic Rays having bearing on upper atmosphere.

The symposium on IGY Data will include : IGY Disciplines such as Meteorology, Geomagnetism, Latitudes and Longitudes, Glaciology, Oceanography, Seismology, Nuclear Radiation, Satellites, and certain aspects of Cosmic Rays and Solar Activity.

Intending participants to the symposia are requested to send the abstracts of their papers to Dr. A.P. Mitra, Secretary, Indian National Committee for IGY, National Physical Laboratory, New Delhi, before Nov. 1, and full papers before Dec. 1, 1960. Papers presented at the symposia will be compiled in a special IGY volume which will form part of the IGY Data Series of the Indian National Committee for IGY.

Symposium on Water Treatment Plants

The Central Public Health Engineering Research Institute, Nagpur, is organizing a symposium on Water Treatment Plants at the Institution of Engineers (Madras Centre), Madras. The three-day symposium will be inaugurated on Sept. 14, 1960 by Shri M.A. Manikkavelu, Minister for Health, Madras State.

The subjects to be discussed at the symposium broadly include : Maintenance and operation of water treatment plants and pre-treatment of water before filtration.

PERSONAL

- Dr. S. Krishnan has been appointed Senior Scientific Officer : Grade II, NAL, Bangalore, with effect from July 11, 1960.

- Shri C.T. Madappa has been appointed Engineer Officer (Grade II), NAL, Bangalore, with effect from July 11, 1960.

- Sarvashri R.K. Gupta, Prabhu Nath, Jagdish Prasad, B.C. Sinha and S.K. Guha have been appointed, on promotion, Junior Scientific Officers, CGCRI, Calcutta, with effect from July 11, 1960.

- Shri V. Radhakrishna Menon has been appointed Section Officer : Grade III, CECRI, Karaikudi, with effect from August 2, 1960.

- Shri Janardhan Misra has been appointed Stores Verification Officer, CSIR, New Delhi, with effect from August 1, 1960.

- Shri K. Krishnamurthy, Accounts Officer, joined duty at NAL, Bangalore, with effect from July 18, 1960 on transfer from CPHERI, Nagpur.

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- Dr. A.P. Mitra, Asst. Director, NPL, New Delhi, and Chairman of the Data and Publications Group of the Committee on Space Research (COSPAR) returned to India on August 16, 1960 after attending a meeting of the Bureau of the Committee held at Stockholm.

- Shri P.I.A. Narayanan, Asst. Director, NML, Jamshedpur, returned to India and resumed duty with effect from June 8, 1960 after completion of his pilot plant training in France under the Indo-French Technical Cooperation Agreement.

* * *

- Dr. J.W. Whitaker, Director, CMRS, Dhanbad and Dr. V. Cadambe, Director, CMERI, Durgapur, have been nominated members of the *Engineering Division Council* of the Indian Standards Institution.

- Dr. B.R. Nijhawan, Director, NML, Jamshedpur, has been nominated a member of the *Metallurgy Advisory Committee* of the Department of Atomic Energy.

- Dr. S. Husain Zaheer, Director, RRL, Hyderabad, has been nominated a member of the Development Council for *Oils, Soaps and Paints*, Ministry of Commerce and Industry.

(*Contd. on p. 2, col. 3*)

BRIEFS

Castorseed and its Products

A two-day seminar on Castorseed and its Products held at the Regional Research Laboratory, Hyderabad, ended on August 12, 1960. Shri S.B.P. Pattabhi Rama Rao, Minister for Education, Government of Andhra Pradesh, inaugurated the seminar. More than 40 representatives of industry and scientists from research intitutions and universities participated in the seminar.

The discussions were held in three technical sessions dealing with (i) Utilization of castor oil, (ii) Processing of castorseed and utilization of castor by-products and (iii) Price, export and standards of castorseed, castor oil and other products. Dr. J.G. Kane (Department of Chemical Technology, University of Bombay), Dr. N. G. Chatterji (Consulting Chemical Engineer, Oil Corporation of India, Calcutta) and Dr. R. Shankaran (Secretary, Indian Central Oilseeds Committee) respectively presided over the three technical sessions.

Process for Leather Boards Demonstrated

Manufacture of leather boards for use as insoles was demonstrated in June 1960 at the Central Leather Research Institute, Madras. The process was developed by the Institute up to the pilot plant stage.

The process consists in shredding leather shavings (vegetable tanned) into fibres; soaking fibres in aqueous sodium carbonate (1 per cent) solution and grinding them to pulp; washing the pulp to remove excess tannins and soluble salts and beating it in Hollander with wetting agents, basic dyes, plasticizer (sulphated pungam oil) and binder (rubber latex); precipitating the latex around leather fibres by adding aluminium sulphate solution; filtering pulp over sieves and pressing the cakes in hand press, drying in shade and finally pressing them in hydraulic press. Indigenous raw materials are used in the process.

Research Fellowships

The following have been awarded CSIR Fellowships for research on projects noted against their names:

Senior Fellowship:

SHRI A. K. BANERJEE—*Electrochemical studies of proteins, polar solids, polyelectrolytes and complexes* (University of Delhi, Delhi).

Junior Fellowships:

1. SHRI S. K. GUPTA—*Chemotherapy of amoebiasis* (Lucknow University, Lucknow).

2 & 3. SARVASHRI B. N. MANI & K.V.R. CHARI—*Electrochemical studies of proteins, polar solids, polyelectrolytes and complexes* (University of Delhi, Delhi).

4. SHRI M. V. KADIVAL—*To investigate the constituents of essential oil from the buds of Ochrocarpus longifolius* (J. S. S. College, Dharwar).

5. SHRI K.K. JANARDHANAN PILLAI—*Electrical conductance and viscosity of electrolyte solution in a wide range* (Annamalai University, Annamalainagar).

6. MISS SADHANA RAMESH BHOMIK—*Absolute values of rate constants in polymerization*—Indian Association for the Cultivation of Science, Calcutta).

* * *

The Director-General, Scientific & Industrial Research, has accepted the resignation of the following Junior Research Fellows:

1. SHRI D.N. BHATTACHARYYA—*Development of jute resin (natural and synthetic) combinations*, Indian Jute Mills' Association Research Institute, Calcutta (Sept. 1, 1960).

2. SHRI MIHIR KUMAR SAHA—*Absolute values of rate constants in polymerization*, Indian Association for the Cultivation of Science, Calcutta (Aug. 1, 1960).

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The research scheme, *Investigation of soft woods of Kerala State* (Investigator-in-charge: Prof. Russell Solomon) has been transferred from N.S.S. College, Pandalam to St. Joseph College, Tiruchirapalli.

The research scheme, *Inducing spawning in food fish of India* (Investigator-in-charge: Dr. L.S. Ramaswami) has been transferred from the Central College, Bangalore to the Jaswant College, Jodhpur with effect from Aug. 1, 1960.

* * *

Dr. D. Sen, Department of Applied Chemistry, University College of Science & Technology, Calcutta University, will supervise the research scheme, *Biochemical studies on pyrimidine derivatives as nucleic acid antagonists* in the absence abroad of Dr. B.C. Guha, Investigator-in-charge of the scheme.

Research Papers

DEVELOPMENT OF A LIGHT-WEIGHT AGGREGATE FROM INDIAN FLY ASHES—S.K. Chopra & Kishan Lal, CBRI, Roorkee. *Indian Concr. J.*, **34** (1960), 201.

PHOTOGRAPHY IN BUILDING RESEARCH—P. K. De, CBRI, Roorkee. *The Viewfinder*, **15** (1960), 135-37.

TENSILE BOND STRENGTH OF BRICKS AND MORTAR—S.S. Rehsi, S.P. Garg & S.K. Chopra, CBRI, Roorkee. *Indian Builder*, **8** (6) (1960), 21-25.

OBSERVATION ON THE IMMERSION REFRACTOMETRY OF *Haemoproteus columbae* IN RELATION TO AQUEOUS AND ALCOHOLIC FIXATIVES—H.N. Ray & B. Hajra, School of Tropical Medicine, Calcutta, *Bull. Cal. School Trop. Med.*, **8** (2) (1960), 55-56.

PERSONAL

(*Contd. from p. 1, col. 3*)

- DR. H.A.B. PARPIA, Industrial Liaison & Extension Officer, CSIR, has been nominated a member of the Development Council for *Food Processing Industries*, Ministry of Commerce & Industry.
- The following Officers of the national laboratories have been nominated members of the Indian Delegation to attend the meetings of the *Committee of International Electrotechnical Commission* to be held in New Delhi from October 31 to November 5, 1960: SARVASHRI G.D. JOGLEKAR (Asst. Director), R.K. TANDON, C.S. RANGAN, C.V. GANAPATHY, M.V. JOSHI and T.V. RAMAMURTHI (Senior Scientific Officers)— NPL, New Delhi; and DR. D. L. SUBRAHMANYAN (Asst. Director)—CEERI, Pilani.
- SHRI V. ARAVAMUTHAN, Senior Scientific Officer, CECRI, Karaikudi, has been nominated a member of the Indian Delegation to attend the Group meeting of Primary Cells and Batteries Committee of the International Electrotechnical Commission to be held at New Delhi.

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- SHRI S. RAMAMRITHAM, Director of Research, Civil Aviation Department, New Delhi, has been nominated a member of the Aeronautical Research Committee of the CSIR as a representative of the Director-General, Civil Aviation Department vice Shri K.L. Puri (Director, Aeronautical Inspection), retired.

RESEARCH IN PROGRESS

National Laboratories

NML, JAMSHEDPUR

Zirconium from Zircon—A Process for the extraction of zirconium from zircon as potassium fluozirconate has been standardized. An yield of 87 per cent of zirconium has been obtained by sintering the ground (—200 mesh B.S.S. and above) mineral with double the amount of potassium silicofluoride at 750°C. for 2 hr. Higher mineral-flux ratio and higher temperature of sintering are required for getting satisfactory results with coarser mineral—P. B. CHAKRAVARTI.

CFRI, JEALGORA

Kutch Lignite—Samples of Umarsar (Kutch) lignite have been analysed and their briquetting properties under various conditions of particle size, moisture contents and pressure have been studied. The results have been compared with the corresponding values for South Arcot lignite. The following conclusions have been reached :

Kutch lignite has a higher percentage of oxygen and hydrogen and a lower percentage of carbon; but unlike South Arcot lignite, Kutch lignite has a higher percentage of sulphur (3.8 per cent compared to 0.7 per cent in South Arcot lignite) and about 50 per cent of it is in organic form.

Briquettes with fairly good strength could be produced by crushing the Kutch lignite to finer size (—72 mesh B.S.S.) ; the carbonized briquettes are slightly more strong than uncarbonized briquettes.

CGCRI, CALCUTTA

Infra-red Spectra of Indian Clays—Infra-red spectral study of Indian clays from Kusumpur, Kot Ransipur, Bhandak and Neyveli has revealed that clay samples from all the four regions are mainly kaolinitic. The principal features of the spectra of the clays are the occurrence of an intense doublet in 9.65 to 9.9 micron region, a shoulder like development near 10.7 micron and a singlet at about 10.95 micron. It is probable that the shape of the absorption maxima near 10.7 micron in the spectra of a kaolinite clay might give indication in regard to the relative degree of order in the stacking of layers present in the kaolinite.

CFTRI, MYSORE

Balanced Protein Food—A new palatable protein food composition containing 16-19 per cent protein, fortified with calcium, phosphorus and vitamins has been standardized. The composition is based mainly (about 75 per cent) on groundnut and tapioca flours.

For the preparation of food product, the dough made from the flour mixture is vacuum extruded through a die in the shape of ringlets, which after steaming are dried under controlled conditions. The product cooks in 3-4 min. The cooked product is blank in taste and therefore lends itself for different types of preparations.

Studies carried out to evaluate its nutritive value have shown that at 10 per cent level of protein intake over a period of four weeks, protein efficiency ratio of the food is 1.71 and the liver fat of rats averaged 14.9 per cent. Weanling rats fed on the product, supplimented with 10 per cent groundnut oil for 8 weeks showed an average weekly gain of 14.3 g.

CDRI, LUCKNOW

Isolation of Basic Proteins — A method has been developed for isolation of basic proteins and polypeptides directly from tissue fluids by complexing with hexametaphosphate. The method has been applied to the preparation of lysozyme (powerful lytic agent active against pathogenic bacteria) from egg-white and similar enzymes from rabit spleen and the latex of *Calotropis procera* (*madar*) and nuclear histones from rabbit liver.

Basic proteins and polypeptides are present in animal tissues and micro-organisms in very small amounts and hence their isolation and purification require special techniques.

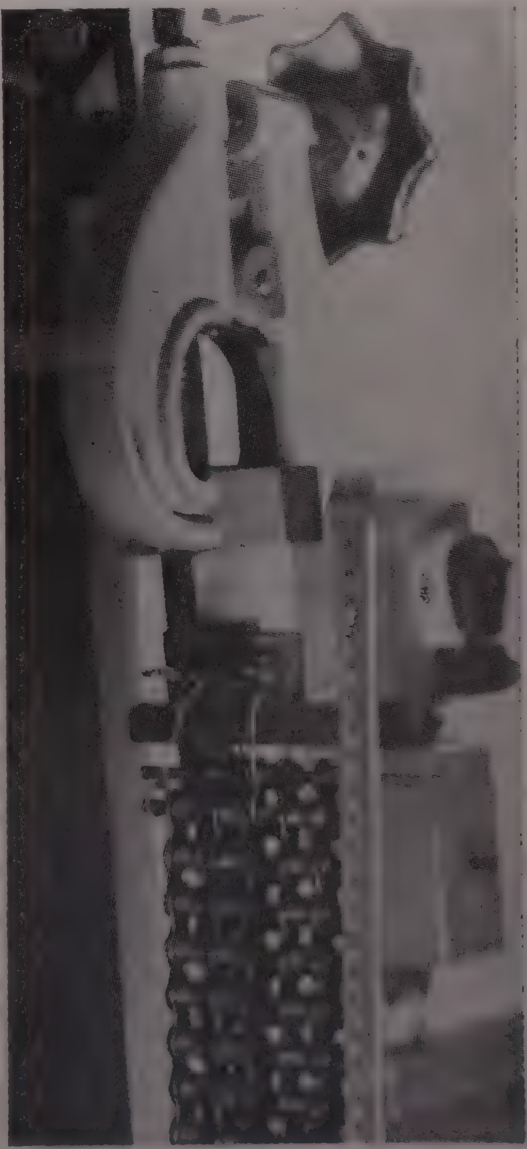
CRRI, NEW DELHI

Factory Roads—Design for the factory roads of the *Heavy Electricals Ltd.*, Bhopal, which are to stand heavy vehicles (180-ton multiwheel transporters) has been worked out. Adopting the design and construction procedures evolved, a cement concrete pavement has been successfully constructed by the factory, without getting into stage construction methods.

The salient features of the road design are : (i) Enveloping of expansive clayey sub-grades of the road, by impervious heavy duty tar felt with a view to curb their volume cycles which are detrimental to pavement structures; and (ii) replacement of the conventional stone soling by a sub-base course of locally available *moorum*.

CLRI, MADRAS

Leather Testing—A device for testing the tensile strength and extension at break of low-strength leather specimens has been evolved. The device which consists of a clamp and motor cycle chains can be used in conjunction with standard tensile strength testing machines. This instrument can be used for testing any material including single fibres.



CLRI, MADRAS—Tensile strength and extension tester

Sponsored Research

Carbohydrate Metabolism—In view of the important interrelation between carbohydrate and fat metabolism as regards thyroid function, the effect of feeding hydrolysed glucose cycloacetoacetate (GCA) to rats, given thyroid and thiouracil along with high fat diets, has been studied.

High fat feeding is found to increase blood sugar, liver fat and tissue weights (liver and kidney). It increases acetoacetate production by liver slices and utilization by kidney slices; but the high rate of utilization is not maintained on prolonged (about 19 weeks) feeding. High fat feeding augments hypothyroidism and suppresses to some extent hyperthyroidism. Beneficial effects of GCA feeding to normal, hyper- and hypothyroid rats maintained on a high fat diet have been indicated.

Oxidation and decarboxylation of pyruvate is disturbed in vitamin B_1 deficiency and consequently blood pyruvate is increased. Hydrolysed GCA is found to increase pyruvate utilization *in vitro*. Studies on the effect of hydrolysed GCA feeding in vitamin B_1 deficient rats have been undertaken. Pyruvemia and higher rate of ketogenesis is prevented by hydrolysed GCA. Results indicate that hydrolysed GCA feeding produces hypoglycemic and glycogenic effects.

The earlier finding that ascorbic acid is synthesised from GCA in germinating legumes has been substantiated by biological experiments. *Mung* beans (germinated for 72 hr. with and without GCA) extracts have been fed to guinea pigs on a scorbutic diet. The extracts from GCA added *mung* beans afford adequate protection against scurvy. Tracer studies indicated that GCA is synthesised by germinating *mung* beans from added glucose and acetoacetate. Attempts to study the intermediates in the biosynthesis of ascorbic acid from glucose-cycloacetoacetate revealed that glucuronic acid is not an intermediate in this process—M. C. NATH, S.G. NAYUDU, J. M. KHANDE & M. L. BELKHODE, University Department of Biochemistry, Nagpur.

Plant Resins—Chemical examination of the resin from the bark of *Hunteria corymbosa*, under progress, has resulted in the isolation of a small amount of volatile oil and an acidic fraction from the petroleum ether extract. Paper chromatographic study of the crude resin revealed the presence of a complex mixture of steroids. A non-crystalline dewaxed resin transparent in ultra violet light has been obtained from the neutral fraction.

The resin on benzylation yielded an amorphous mass (m.p. 126-214°) showing characteristic absorption spectrum for the presence of alcoholic hydroxyl group in the compound. Chromatography after hydrolysis of the benzoate gave three sterol fractions of which one has been identified as β-sitosterol. Esterification of the acidic fraction gave a solid ester (m.p. 182-210°C.) non-steroidal in nature—P.K. BOSE & S. P. RAMAN, Bose Institute, Calcutta.

Chick Haemoglobin—Fractionation studies on chick haemoglobin have been carried out using a carboxymethyl cellulose (CM-cellulose) resin. The resin (cation exchanger) prepared from sulphite pulp has an ion-exchange capacity ranging between 0.2 to 0.3 meq/g.

Haemoglobin, prepared from whole blood of adult chick, showed two distinct fractions widely separated from each other when chromatographed using the CM-cellulose. Spectrophotometric curve revealed three peaks, of which two had relatively higher optical densities (O.D.). Rechromatography of the two major fractions (showing higher O.D.) on an identical column also established that these two fractions were distinct components. The two major fractions and the pure chick haemoglobin were subjected separately to paper electrophoresis. While the electrophoretic pattern of pure chick haemoglobin showed two peaks those of chromatographic fractions showed single peak in each case—P. K. CHOUDHURY, University College of Science & Technology, Calcutta.

* * *

The research scheme *Studies on the shrinkage temperature of hide and leather* (Prof. B.N. Ghosh, University College of Science & Technology, Calcutta) has been terminated with effect from Aug. 31, 1960.

PATENTS & PROCESSES

Applications Accepted

66196 : *A process for the isolation of new cardiac glycosides from the seeds of Thevetia neriifolia Juss.*—S. Rangaswamy & E.V. Rao, Andhra University, Waltair.

68803 : *Improvements in or relating to the manufacture of pressure sensitive adhesive tapes*—S.L. Kapur & B.R. Rao, NCL, Poona.

68377 : *Improvements in or relating to the protection of metallic surfaces against atmospheric corrosion*—K.S. Rajagopalan & G. Ramaseshan, CECRI, Karaikudi.

Applications Sealed

India

64168 : *Improvements in or relating to centrifugal pumps*—N.S. Govinda Rao, K. Seetharamiah, & H.C. Radhakrishna, Indian Institute of Science, Bangalore.

65282 : *Improvements in or relating to crease and shrink proofing of cellulosic textiles*—V.B. Chipalkatti, K.V. Ramalingam, N.B. Sattur & E. Syamalarao, Shri Ram Institute for Industrial Research Delhi.

France

764.147 : *A process for the preparation of azelaic acid semi-ester suitable for making civetone dicarboxylic acid*—U. G. Nayak, K. K. Chakravarti & S. C. Bhattacharyya, NCL, Poona.

Processes Leased Out

The following processes developed at the national laboratories have been leased out for commercial development. The names of firms whom the processes have been leased are indicated against the processes :

1. *Nicotine Sulphate from Tobacco and Tobacco Wastes* (Indian Pat. Nos. 45666 and 54867), NCL, Poona—*Dhirubhai Mubjibhai Patel & Co.*, Dharmaj (Kaira Dt.).
2. *Cardioactive glycosides of Digitalis* (Indian Pat. Nos. 58870 & 62497), CDRI, Lucknow—*Mehta Brothers*, Amritsar.
3. *Active Dry Bakers' Yeast*, CFTRI, Mysore—*Dyer Meakin Breweries Ltd.*, Solan.

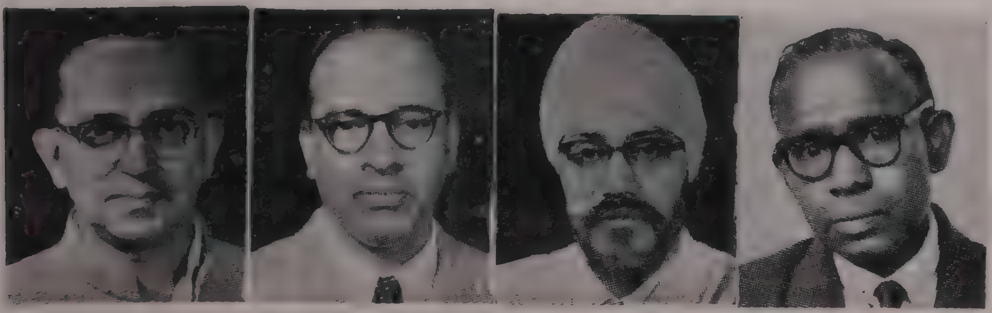
Printed at Asia Press, Delhi-6 and Published by the Council of Scientific & Industrial Research, Old Mill Road, New Delhi-1.
R. N. 4212/57

CSIR NEWS

VOL. 10 NEW DELHI—SEPT. 12, 1960 : BHADRA 21, 1882 No. 17

LIBRARY
MYSORE

Kidwai Memorial Prize to CFTRI Scientists



Shri M.R. Chandrasekhara and Drs. M. Swaminathan, D.S. Bhatia & V. Subrahmanyan

Shri M. R. Chandrasekhara (Junior Scientific Officer), Dr. M. Swaminathan & Dr. D.S. Bhatia (Asst. Directors) and Dr. V. Subrahmanyan (Director) of the Central Food Technological Research Institute, Mysore, have been jointly awarded the Rafi Ahmed Kidwai Memorial Prize for outstanding results of researches in Dairying achieved during 1957. Their research work pertains to the production of infant food from buffalo milk.

The Kidwai Memorial Prizes (eleven) instituted by the Indian Council of Agricultural Research (ICAR) for outstanding research in the fields of agriculture, botany, horticulture, dairying, animal husbandry and allied sciences are of the value of Rs. 5,000 each. This is the first year of award of the prizes.

Shri S.K. Patil, Union Minister for Food & Agriculture distributed the prizes to the recepients of awards at the annual general meeting of the ICAR held at New Delhi on Aug. 30, 1960.

Symposium on Light Metal Industry in India

A symposium on Light Metal Industry in India will be held at the National Metallurgical Laboratory, Jamshedpur, sometime in February 1961. Technologists, metallurgists and research scientists in India and abroad are being invited to contribute technical papers and participate in the symposium.

The scope of the symposium will cover the following aspects :

1. Indigenous raw materials, their assessment, preparation and beneficiation.
2. Pyro-,electro, and hydro-metallurgical techniques of production of light metals and their alloys in the general context of indigenous raw materials and resources.
3. Physico-chemical reactions governing the extraction metallurgy of light metals and alloys.
4. Recent technological advances in light metal casting.
5. Reclamation and refining of light alloy scrap and development of indigenous secondary alloy industry.
6. Recent developments in heat-treatment of light metals and alloys.
7. Physical, chemical and corrosion resistance properties of light metals and their alloys.
8. Physical metallurgy of light metals and their alloys.
9. The role of light metals and alloys in metallurgical, chemical and nuclear reactor technology.
10. Present status and future expansion of light metal industry in India in relation to Five-Year Plans and world production trends.

Meetings

A meeting of the Executive Council of the CGCRI, Calcutta, will be held at the Institute on Sept. 13, 1960 at 3.30 p.m. Lala Shri Ram will preside.

A meeting of the Executive Council of the CEERI, Pilani will be held at the Institute on Sept. 17, 1960 at 3.00 p.m. Prof. M.S. Thacker, Director-General, Scientific & Industrial Research, will preside.

PERSONAL

- **Shri C. Ganesa Aiyar**, retired officer of the Central Secretariat Service and Secretary of the Union Public Service Commission, New Delhi, has been appointed Officer-on-Special Duty (Personnel), CSIR Secretariat, New Delhi, with effect from Aug. 27, 1960.
- **Dr. A.C. Mazumdar** has been appointed Senior Scientific Officer : Grade I, CDRI, Lucknow, with effect from Aug. 5, 1960.
- **Shri S.S. Ghosh** has been appointed, on promotion, Senior Scientific Officer : Grade II, BITM, Calcutta, with effect from July 2, 1960.
- **Shri U.P. Prabhu** has been appointed, on promotion, Junior Scientific Officer, CEERI, Pilani, with effect from Aug. 8, 1960.
- **Drs. K.B. Raut, T.R. Rajagopalan** and **A.L. Misra** joined CDRI, Lucknow, as Pool Officers.

* * *

- **Dr. B. Mukerji**, Director, CDRI, Lucknow, left for U.S.A. on Aug. 24, 1960 to attend the Fifth International Congress on *Effects of Processing and Additives on the Nutritive Values of Food*. Dr. Mukerji will return to India by mid-September 1960.

(*Contd. on p. 2, col. 2*)

BRIEFS

Binola Udyog

This Hindi monograph—Binola Udyog (Cottonseed Industry)—reviews in simple and non-technical language the scientific and technological information on the utilization of cottonseed and its byproducts.

The 104-page monograph presents the information under the following chapters : Varieties ; composition ; storage ; processing of cottonseed ; cottonseed oil ; cottonseed cake ; by-products ; and production, trade and marketing. The methods of storage of cottonseed and use of its cake as cattle feed have been described in detail. A brief account of the recent developments in the cottonseed industry and researches undertaken at different institutions in India have also been incorporated in the publication.

Copies of the publication (Price Rs. 6.00) are available from the Under Secretary, Publications Directorate, CSIR, New Delhi.

Research Fellowships

The following have been awarded CSIR Fellowships for research on projects noted against their names ;

Senior Fellowships :

1. SHRI R. S. MAITRA—*Vitamin B_{12} in relation to the metabolism of some micro-organisms* (University College of Science & Technology, Calcutta).
2. SHRI G. GANGADHARAN—*Development of torquemeter using magnetostriction phenomena* (P.S.G. College of Technology, Coimbatore).

Junior Fellowships :

1. SHRI B. C. PANT—*Organic derivatives of silicon and derivatives of aluminium and germanium with silanols* (University of Gorakhpur, Gorakhpur).
2. SHRI K. S. SHARMA—*Studies in addition polymerization*—(University of Lucknow, Lucknow).
3. KUMARI L. SARASWATHI—*Physico chemical studies on surface active substances at the dropping mercury electrode* (Birla College, Pilani).
4. KUMARI MANJULA BISWAS—*Respiratory activity of the germinating rice embryo under different oxygen tensions, etc.* (University College of Science, Calcutta).

Research Schemes Terminated

The following schemes have been terminated with effect from the date noted against their names :

1. *Studies on the shrinkage temperature of hide and leather*—Dr. B.N. Ghosh, University College of Science & Technology, Calcutta (Aug. 31, 1960).
2. *Behaviour of steel between limits of proportionality and field point*—Shri Kanwar Sain, University of Roorkee, Roorkee (Sept. 1, 1960).

* * *

The research schemes, (*i*) *Design of dust filters* and (ii) *Study of submerged combustion* will be supervised by Dr. K.C. Roychowdhury and Dr. B.C. Chanda, Readers in Chemical Engineering, Jadavpur University, Calcutta, respectively consequent on Dr. B. Ghose appointed as Professor, Department of Chemical Engineering and Technology, Panjab University, Chandigarh.

* * *

Shri G. Shanmugam has been appointed Investigator-in-charge of the research scheme, *Turbo charges for diesel engine* (P.S.G. College of Technology, Peelamedu) in the absence abroad of Shri C.P. Kothandaraman.

PERSONAL

(*Contd. from p. 1, col. 3*)

- DR. A. SREENIVASAN, Deputy Director, CFTRI, Mysore, left for U.S.A. to attend the Conference on *Protein Malnutrition* and the Fifth International Congress on *Malnutrition* at Washington (August 20 to September 8). He will also participate in the meeting of the F.A.O.—W.H.O. Protein Advisory Group. Dr. Sreenivasan will return to Mysore on Sept. 18, 1960.
- MAJOR N.V.R. IYENGAR, Senior Scientific Officer, CFTRI, Mysore, left India on Sept. 3, 1960 as a member of a team sponsored by the National Productivity Council of India to study the latest methods of packaging industry in Western Europe, Switzerland, U.S.A. and Japan. The study team is expected to return India in November 1960.
- DR. M.M. DHAR, Senior Scientific Officer, CDRI, Lucknow, left for U.S.A. on July 26, 1960, under the Rockefeller Foundation Fellowship Programme. He will be on training for a period of one year at Harvard University under Prof. E.J. Corey.

* * *

- DR. K.S. KRISHNAN, Director, NPL, New Delhi, has been nominated a member of the *National Committee of Physics*.
- The following have been nominated members of the Committee/Panel of the Indian Standards Institution :

DR. A. LAHIRI, Director, CFRI, Jealgora—*Panel for Studying Documents* (*Convenor*).

DR. J.W. WHITAKER, Director, CMRS, Dhanbad — *Panel for Studying Documents.*

DR. K.S.G. DOSS, Director, CECRI, Karaikudi (*Principal Member*) and Shri M.R. Verma, Senior Scientific Officer, NPL, New Delhi (*Alternate Member*)—*Sugar Industry Sectional Committee.*

DR. D.S. DATAR, Asst. Director, RRL, Hyderabad—*Panel for Methods of Test for Bleaching Earths.*

DR. J.S. AGGARWAL, Asst. Director, RRL, Hyderabad—*Steam Cylinder Oils Sub-Committee.*

SHRI T.N. SESHADRI, Asst. Director (*Principal Member*) and Shri K.R. Rao, Senior Scientific Officer (*Alternate Member*), CBRI, Roorkee—*Otientation and Ventillation Sub-Committee.*

SHRI M.R. VERMA, Senior Scientific Officer (*Principal Member*) and Shri J.V. Nagaraja, Junior Scientific Officer (*Alternate Member*), NPL, New Delhi—*Plastic Moulding Sub-Committee.*

* * *

- SHRI O.P. SRIVASTAVA, Junior Scientific Officer, CDRI, Lucknow, has been awarded the Ph. D. degree by the Lucknow University for his thesis: *Studies on some Fungal Diseases of Plants and Man.*
- SHRI ANADI CHATTERJI, Junior Scientific Officer, IIBEM, Calcutta, has been admitted to the D. Dhil. (Science) degree of the Calcutta University for his thesis: *Protozoal Metabolism.*
- SMT. K SHETE, Senior Scientific Assistant, CDRI, Lucknow, has been awarded the Ph.D. degree by the Bombay University for her thesis : *Studies in Certain Aspects of Metabolism of Actinomycetes and Fungi.*

* * *

Dr. O.P. Mediratta, Officer-in-Charge, Aeronautical Development Establishment, Ministry of Defence, has been nominated a member of the Aeronautical Research Committee of the CSIR till March 31, 1962.

RESEARCH IN PROGRESS

National Laboratories

NPL, NEW DELHI

Determination of Thickness of Electroplated Chromium—The usual method of determining thickness of chromium plating in British Standard and Indian Standard Specifications is by B. N. F. Jet test method. In this method, the thickness is calculated from the time required for stripping of plating by a stripping solution. As the rate of stripping is highly temperature sensitive, it is likely to give erroneous results.

A complexometric method has been developed at the laboratory for determining the thickness of chromium plating on steel. The method consists in stripping the plate by dissolving away chromium, complexing the latter with ethylene diamine tetra acetic acid (EDTA) and determining the chromium content of the solution in a spectrophotometer at $542 m\mu$ or in absorptiometer using a suitable filter after taking into account the small amount of iron dissolved during stripping.

NML, JAMSHEDPUR

Heating Elements—The effect of addition of manganese and nickel as alloying elements on the workability and physical properties of various alloys has been studied with the object of developing substitutes for electrical resistance alloys which are imported for use in domestic and industrial heating. High percentage of manganese in the alloys has been found to improve the hot-workability whereas addition of nickel in higher amounts decreases the hot-workability.

The alloys which have been evolved on the basis of this study have been tested for their standard life with an apparatus designed and fabricated at the Laboratory. One of the experimental alloys when tested at 1200°C. at 2 min. on and 2 min. of conditions showed an accelerated test life of about 93 hr. as compared to 67 hr. for nichrome wire under similar conditions.

CGCRI, CALCUTTA

Plasters from Gypsum—The properties of plasters obtained by calcining gypsum between 80°C. and 500°C. have been studied. The plasters obtained at calcination temperatures between 80 and 150°C. and between 400 and 500°C. do not possess setting properties and do not show any setting expansion. Plasters obtained by calcination at temperatures between 150 and 400°C. showed setting characteristics; the setting time and expansion and rise in temperature during setting showed a definite relation with the temperature of calcination. It is found that the rise in temperature during setting of plaster is intimately connected with quality and nature of the plaster.

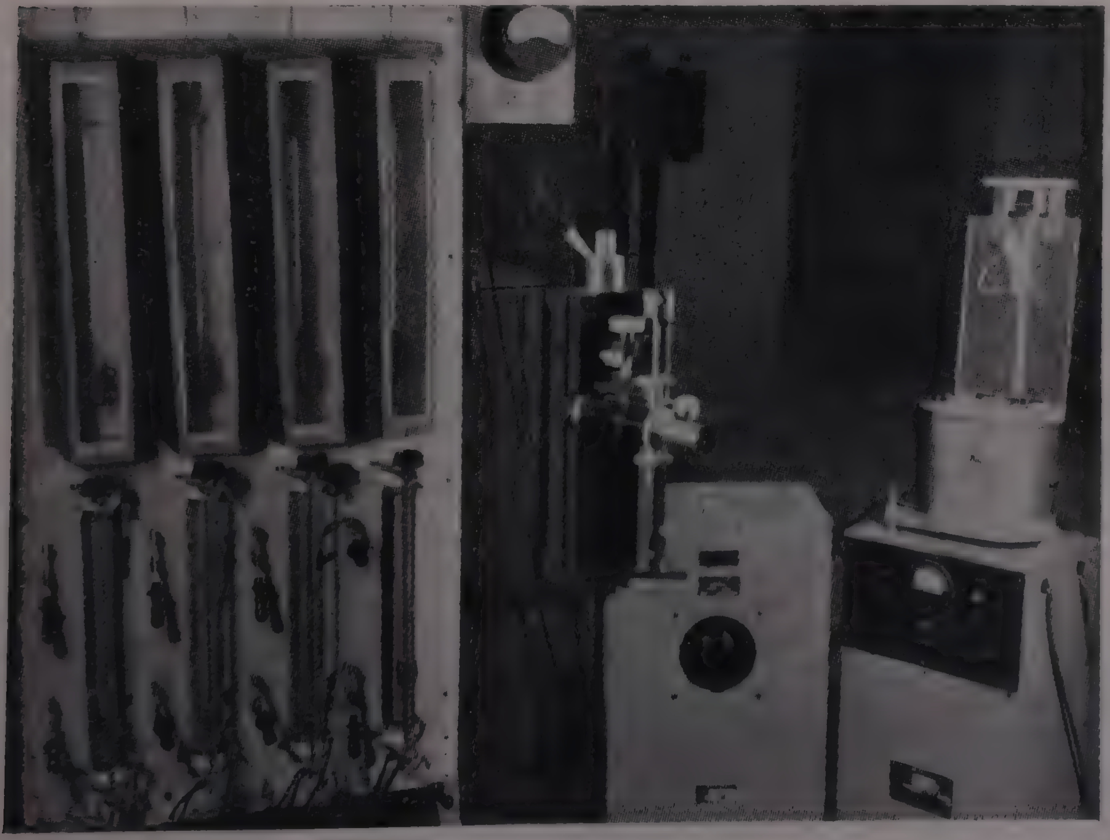
CDRI, LUCKNOW

Experimental Atherosclerosis—The effect of administering *dl*, α-tocopherol to cholesterol fed rabbits (for producing experimental atherosclerosis) has been studied. α-Tocopherol has been found to increase the cholesterol content and the area of the involved aortic endothelial surface. However, examination by plaque technique has shown enhancement in the severity of atheroma. It is, therefore, suggested that for the assessment of degree of atherosclerosis, measurement of the severity of atheroma is of greater significance than its extent because it is usually related to occlusive process in the vessels. α-Tocopherol appears to increase this occlusive process.

CECRI, KARAIKUDI

Thickness of Electroplates—A novel technique, based on the impedance change of the stripping cell, has been developed for determining the thickness of electroplates.

The technique consists in dissolving out a small well-defined area of the electroplate (chromium plating on copper or cadmium plating on mild steel) by passing constant current in the electrolysing system containing suitable stripping solution and super-imposing with electrolysing current a small constant alternating current. The resulting d.c. voltage actuates a relay that stops a timer (Dekatron Scaler) which is started at the time when constant current is switched on and counts the pulses of the a.c. ripple. Knowing the exact time required for dissolving the electroplates its thickness is calculated by applying Faraday's Laws—U.H. NARAYANAN, K. SUNDARARAJAN & M.S. KASABEKAR.



NML, JAMSHEDPUR—Apparatus for determination of life of heating elements

Sponsored Research

Cytochemistry of Parasitic Protozoa — Refractrometric investigations on the effects of different fixatives has been carried out on *Plasmodium berghei*, *Haemoproteus columbae*, and *Balantidum coli* with the help of phase contrast microscopy. It is observed that Helly's fixative is superior to alcohol, acetic acid- and chloroform- containing fixatives with regard to the retention of cellular components in cells of the protozoa.

B. coli when viewed through Dyson type interference microscope, showed that during the early phase of life, the animal undergoes considerable physiological change as a result of which the mass per unit area varies to a great extent but at a later stage the animal attains physiological equilibrium—H.N. RAY & BANSIDHAR HAJRA, School of Tropical Medicine, Calcutta.

IN PARLIAMENT

Multi-Purpose Food—Prof. Humayun Kabir, Union Minister for Scientific Research and Cultural Affairs in reply to a question by Shri B. N. Bhargava informed the Rajya Sabha that the pilot plant (capacity, 1 ton per day) for production of multi-purpose food working at the Central Food Technological Research Institute, Mysore, will be transferred to Coimbatore shortly, where a private party has undertaken to run it (Aug. 23, 1960).

New Building Processes—Prof. Humayun Kabir replying to another question by Shri B. N. Bhargava stated that popular and technical literature in English and Hindi covering details of preparation of non-erodable mud plaster, brick and block making machine and the technique of doubly curved stack roof, developed at the Central Building Research Institute, Roorkee, had been distributed to various organizations concerned with rural development, to Vigyan Mandirs and State Development Commissioners.

Prof. Kabir added that the brick and block making machine was being manufactured by three firms (*J. K. Iron & Steel Co. Ltd.*, Kanpur; *Super Crafts Private Ltd.*, Calcutta; and *Prem Enamel and Metal Factory*, New Delhi) on a commercial scale (Aug. 23, 1960).

PATENTS & PROCESSES

Applications Filed

INDIA

72611 : *An automatic apparatus for the collection of atmospheric pollen and spores*—P.K.K. Nair & K.N. Kaul, NBG, Lucknow.

72869 : *Purification of cottonseed soapstock to obtain light-coloured distilled fatty acids*—C. C. Ninan, C.R. Rao & S.H. Zaheer, RRL, Hyderabad.

U.K.

27764/60 : *Improvements in or relating to the production of trans-diethylstilbestrol dimethyl ether*—C.C. Joshi, J.L. Bose & R.C. Shah, NCL, Poona.

Applications Accepted

65980 : *A method for the conversion of higher tar acids to lower phenols*—N.C. Shah, N.G. Basak & A. Lahiri, CFRI, Jealgora.

66195 : *Preparation of lead dioxide electrodes for electrolysis*—H.V.K. Udupa & K.C. Narasimham, CECRI, Karaikudi.

66670 : *A device for the rapid classification of mica, or the like high frequency dielectrics on the basis of power factor*—S.S. Mandal & S.B. Roy, CGCRI, Calcutta.

Applications Sealed

64554 : *A bearing*—V.S. Goel, CRRI, New Delhi.

64956 : *Preparation of predigested protein-rich food powders*—B.S. Lulla, D.S. Johar & V. Subrahmanyan, CFTRI, Mysore.

Process for Enzyme Depilant and Bates

The Central Leather Research Institute, Madras has developed a process (Indian Patent Nos. 52670, 54998 and 64354) for the manufacture of enzyme depilants and enzyme bates from indigenous raw materials. The products prepared at the Institute on pilot plant scale have been tested by commercial tanneries and found to be comparable in quality to imported materials.

The process consists in growing a mold of Aspergillus species on a culture medium, mixing it with finely pulped animal pancreas, drying the mixture including culture medium and powdering. The powdered dried product in admixture with common salt is used as enzyme depilant for unhairing skins and hides. For the preparation of enzyme bates, the product is mixed with common salt, ammonium sulphate and ammonium chloride.

The yields of enzyme depilant and enzyme bates (2 grades : Nos. I & II) obtained in pilot plant experiments are 70, 93 and 117 per cent respectively on the basis of dry weight of culture medium used for growing the mold.

Total capital outlay for a commercial plant having a capacity of 140 lb. of enzyme depilant per day is estimated at about Rs. 66,000. The plant and machinery required are the mixing and mincing machines, autoclave, drier and disintegrator.

Parties interested in taking up the commercial development of the process may correspond with the Secretary, National Research Development Corporation, Mandi House, New Delhi-1.

बिनौला उद्योग

BINOLA UDYOG

A review in Hindi of scientific and technological information on the utilization of cottonseed and its by-products

Pp. vi+104 ; Royal 8vo

Price : Rs. 6.00

Copies available from :

Under Secretary, Publications Directorate, CSIR,
Old Mill Road, New Delhi-1.

Printed at Asia Press, Delhi-6 and Published by the Council of Scientific & Industrial Research, Old Mill Road, New Delhi-1.

R. N. 4212/57

CSIR NEWS

A/c

5/12/60

VOL. 10 NEW DELHI—SEPT. 26, 1960 : ASVINA 4, 1882 No. 18

MEETINGS

A meeting of the *Publications Committee* will be held at the CSIR Secretariat, New Delhi, on Sept. 29, 1960 at 3.30 p.m. Prof. M.S. Thacker, Director-General, Scientific & Industrial Research, will preside.

A meeting of the *Aeronautical Research Committee* will be held at the Hindustan Aircraft Ltd., Bangalore, on Oct. 1, 1960 at 9.00 a.m. Dr. D.S. Kothari will preside.

A meeting of the *Geological & Mineralogical Research Committee* will be held in the Conference Room of the CSIR Secretariat, New Delhi, on Oct. 7, 1960 at 10.00 a.m. Dr. D.N. Wadia will preside.

A meeting of the *Electrical & Mechanical Engineering Research Committee* will be held at the P.S.G. College, Coimbatore, on Oct. 13, 1960 at 9.30 a.m. Prof. M.S. Thacker, Director-General, Scientific & Industrial Research, will preside.

Corrosion and its Prevention

The refresher course on Corrosion and its Prevention, organised every year by the Central Electrochemical Research Institute, Karaikudi for the benefit of industrial organisations and government departments concerned with the problem of corrosion preventive measures, is scheduled to commence on Nov. 7, 1960.

The five-week course will include lectures on corrosion processes, and economics of corrosion preventive measures. Practical classes, demonstrations of processes and extension lectures on allied subjects will be arranged.

Persons who wish to undergo the training should hold Bachelor's degree in chemistry or metallurgy or engineering and should be sponsored by industrial organizations or government departments.

Prospectus and application forms are available from the Administrative Officer, Central Electrochemical Research Institute, Karaikudi. Applications should reach the Director, CECRI, Karaikudi by Oct. 7, 1960.

PERSONAL

●**Shri K. M. Agarwala** has been appointed, on promotion, Under Secretary, CSIR Secretariat, New Delhi, with effect from Sept. 14, 1960.

●**Shri G. T. Gadre** has been appointed, on promotion, Senior Scientific Officer : Grade II, CSRI, Bhavnagar, with effect from Aug. 16, 1960.

●**Sarvashri S. Ramachandran** and **N. Subramanian** have been appointed, on promotion, Senior Scientific Officers: Grade II, CECRI, Karaikudi, with effect from Aug. 29, 1960.

●**Shri V.K. Venkatesan** has been appointed, on promotion, Junior Scientific Officer, CECRI, Karaikudi, with effect from Aug. 27, 1960.

●**Shri Nirmal Singh** has been appointed, on promotion, Mechanical Engineer, NML, Jamshedpur, with effect from Aug. 16, 1960.

●**Shri Ratan Singh** has been appointed, on promotion, Chemical Engineer, NML, Jamshedpur, with effect from Aug. 16, 1960.

●**Shri A. T. Chakravarti** joined the IIBEM, Calcutta, as Accounts Officer with effect from Aug. 27, 1960.

●**Shri B. S. Sinha**, Under Secretary, CSIR Secretariat, New Delhi, has been transferred as Administrative Officer, Indian Institute of Petroleum, with effect from Sept. 14, 1960.

* * *

●**Shri R. M. Krishnan**, Asst. Director, NML, Jamshedpur, left India on Sept. 5, 1960 for Sweden, U.S.A. and Japan as a member of the Foundry Productivity Team of the National Productivity Council under the T.C.M. Programme. Shri Krishnan will also attend the International Foundry Congress at Zurich (Sept. 18-24).

Symposium on Light Metal Industry in India

Intending participants to the symposium on Light Metal Industry in India to be held at the National Metallurgical Laboratory, Jamshedpur during February 1961 (*CSIR News*, Vol. 10, No. 17, p. 1) should send the abstracts of papers in quadruplicate to the Director, National Metallurgical Laboratory, Jamshedpur by middle of October 1960. Full papers in quadruplicate should reach by Nov. 15, 1960.

●**Shri C. Ray**, Junior Scientific Officer, CDRI Lucknow, left for U.K. on Sept. 12, 1960 for training in Electro-physiological studies in the Peripheral Nervous System, under the Colombo Plan.

●**Dr. S.K. Gupta**, Senior Scientific Officer, CDRI, Lucknow, after completion of his practical training in Chemotherapy of Tuberculosis in U.K. under the Colombo Plan, returned to India and resumed duty with effect from Aug. 1, 1960.

●**Dr. R. N. Chakravarti**, Senior Scientific Officer, CDRI, Lucknow, who had been to Canada for practical training in Electron Microscopy and Experimental Pathology, under the Colombo Plan, returned to India and resumed duty with effect from Sept. 12, 1960.

●**Shri M.A. Ghani**, Senior Scientific Officer, CLRI, Madras, returned to India from France after completion of his training in Leather Auxiliaries.

* * *

●**Dr. V. Subrahmanyan**, Director, CFTRI, Mysore, has been nominated a member of the Madras

(Contd. on p. 2, col. 3)

BRIEFS

Symposium on Proteins

The three-day symposium on Proteins, organised by the Chemical Research Committee of the CSIR jointly with the Society of Biological Chemists, India, at the Central Food Technological Research Institute, Mysore, concluded on Aug. 16, 1960. The symposium was inaugurated by Prof. M.S. Thacker, Director-General, Scientific & Industrial Research and presided over by Shri P. A. Narielwala. Dr. B.C. Guha, Chairman, Chemical Research Committee addressed the delegates.

Over 80 papers presented and discussed at the symposium covered the following aspects: Chemistry; biochemistry including biosynthesis, metabolism and inter-relationship, immunology and microbiology; nutrition; and technology.

The papers on chemical aspects mainly dealt with the isolation, characterisation and estimation of proteins. Biochemical aspects of proteins were discussed in a number of papers dealing with role of vitamin B_{12} and streptomycin in protein biosynthesis both in animal and microorganisms. A paper which was discussed at length was on the effect of proteins and amino acids on blood sugar levels and glucose tolerance. Papers under immunological and microbiological aspects covered topics like alanine dehydrogenase in mycobacteria, antigenicity of human spermatozoa and its significance in certain cases of human infertility.

In the field of nutrition, papers relating to clinical trials with vegetable protein foods and protein malnutrition in children attracted much attention. The evidence collected independently by different workers indicated that protein-rich materials can be successfully used for the treatment.

In the technology group, most of the papers related to protein isolation and protein hydrolysates with the main object of using them in the treatment of protein malnutrition, notably Kwashiorkor. The technological aspects of protein isolation both from groundnut (in conjunction with oil, starch and other fractions) and from groundnut cake were discussed in a paper presented by a group of workers. Papers relating to the production of proteins from grass and other leafy materials, as also one on fish flour, drew considerable interest.

Wind Mills Survey

The Wind Power Division of the National Aeronautical Laboratory, Bangalore has designed two types of wind mills suited to Indian conditions and field trials of these mills have given satisfactory results.

The Laboratory has invited particulars (make, condition, purpose for which used, etc.) of wind mills working in the country at farms, wells, etc. under private individuals with a view to explore the possibilities of manufacturing wind mills and installing them at suitable sites in the country.

Research Fellowships

The following have been awarded CSIR Fellowships for research on projects noted against their names:

Senior Fellowship:

Shri G. M. Bhatnagar—*Studies in metabolic antagonism, etc.* (Muslim University, Aligarh).

Junior Fellowships:

1. Shri Razaul Haque—*Studies on the biosynthesis of fats* (University College of Science & Technology, Calcutta).
2. Shri Mahesh Prakash—*Studies in cyclo-octane series* (Delhi University, Delhi).
3. Shri S.K. Chakraborti—*Quantum mechanics of molecular interaction* (University College of Science & Technology, Calcutta).

CECRI, Karaikudi

The Central Electrochemical Research Institute, Karaikudi, has been providing technical assistance to M/s *Ferro Alloys Corporation Ltd.*, Shreeram Nagar (Srikakulam Dt.), Andhra Pradesh for undertaking pilot plant experiments on the production of manganese from low-grade manganese ores by the process worked out by the Institute.

RRL, Hyderabad

The Regional Research Laboratory, Hyderabad, has been recognised by the Osmania University as a Centre for conducting research in X-ray crystallography for Ph.D. degrees.

* * *

Dr. H. J. Arnikar, Reader in Chemistry, Banaras Hindu University, Banaras will supervise the scheme, *Studies on the Budde effect in halogens under electric discharge* *vice* Dr. S. S. Joshi, retired.

PERSONAL

(*Contd. from p. 1, col. 3*)

State Advisory Board for Sago Industry, till May 1962.

●Dr. S. Husain Zaheer, Director, RRL, Hyderabad, has been nominated a CSIR representative on the Committee of the Khadi and Village Industries Commission, Bombay.

●Dr. A. Lahiri, Director, CFRI, Jealgora, has been nominated a member of the Durgapur Industries Board.

●Dr. D.S. Bhatia, Asst. Director, CFTRI, Mysore, has been nominated a member of the Development Council for Food Processing Industries, Ministry of Commerce and Industry.

●Dr. S.K. Barat, Asst. Director, CLRI, Madras, has been nominated Vice-President, Indian Leather Technologists' Association, Calcutta.

●Dr. S. L. Kapur, Asst. Director, NCL, Poona, has been nominated a member of the Ad-hoc Sub-Committee constituted by the Indian Central Tobacco Committee to consider a scheme for technological research on different types of tobacco.

●Dr. M. Pancholy & Shri M.R. Verma, Senior Scientific Officers, NPL, New Delhi, have been nominated members of the Naval Research and Development Panel, Naval Headquarters, New Delhi.

●Maj. Gen. Harkirat Singh, Engineering-in-Chief, Army Headquarters, Ministry of Defence, has been nominated a member of the Civil Engineering & Hydraulic Research Committee up to March 31, 1962 *vice* Maj. Gen. R. E. Aserappa.

* * *

●Shri A. P. Joshi, ex-Senior Research Fellow on the scheme, Biosynthesis of Organic Acids in Molds and Plants (Investigator-in-charge: Prof. C.V. Ramakrishnan), Biochemistry Department, M. S. University of Baroda, has been awarded the Ph.D. degree by the Baroda University for his thesis: *Biosynthesis of Citric Acid in Aspergillus niger with special reference to C_4-Acid Metabolism.*

●Shri K. V. Jagannadha Rao, ex-Junior Research Assistant in the CSIR scheme, Indian Commercial Timbers (Investigator-in-charge: Dr. L. Ramachandra Rao, Andhra University, Waltair) has been declared qualified for the D.Sc. degree by the Andhra University for his thesis: *Chemical Examination of Indian Medicinal Plants.*

RESEARCH IN PROGRESS

National Laboratories

NML, JAMSHEDPUR

Up-grading of Fluorspar—Beneficiation studies have been carried out on fluorspar sample (assaying, CaF_2, 22.5; SiO_2, 64.65; $CaCO_3$, 1.75; Al_2O_3, 4.3; Fe_2O_3, 2.7; Pb, 0.04; and S, 0.20 per cent with traces of Zn, Ba, Cu and W) from Thurwali mine in Dungarpur Dt., Rajasthan, to produce a concentrate for use in steel making.

Flotation of the 100-mesh size ore sample employing sodium oleate-oleic acid emulsion as collector and sodium silicate as gangue depressant at pH 9.5, followed by two cleanings of the rougher float yielded a refloat cencentrate assaying CaF_2, 85.1; SiO_2, 6.9; $CaCO_3$, 3.8; Pb, 0.03; and S, 0.23 per cent with a recovery of 88.3 per cent of CaF_2. This concentrate is suitable for use in steel making as it very nearly conforms to the requirements specified for the purpose.

CFRI, JEALGORA

Structure of Air-Oxidized Vitrains and Humic Acids—X-Ray study of the oxidized vitrains (—70 mesh B.S.) at 190-200°C. and the regenerated humic acids has been carried out using monochromatic radiation. The scattered X-ray intensities are micro-photometered on a Hilger non-recording instrument, and the relative intensities are obtained after applying corrections for the finite height of the beam and polarization.

The molecular structure of the oxidized vitrains and humic acids are characterized by (i) a layer-size distribution and a mean size not dissimilar to that of the original vitrains, (ii) the enhanced intensity of the (002) band due to COOH, OH, and C=0 groups, coplanar with aromatic layers, decrease in the amount of amorphous material and a small increase in the number of layers in 'packets' of two and three at the expense of those occurring singly. The study has shown that air oxidation renders the bulk structure of the vitrains less porous with a drawing together of the aromatic layers by removing aliphatic and other oxidisable material—S.Z. ALI.

CDRI, LUCKNOW

Chlorpropamide in Ambulatory Diabetes—Preliminary screening of chlorpropamide in a series of 12 cases has indicated that it is a potent hypoglycaemic agent of considerable clinical value. However, the drug has a few side effects. Studies conducted so far suggest that it may not be of much value in the 'Thin type' of insulin deficient diabetics, but can exert good control on average diabetic patients when used in dosage smaller than that of carbutamide and tolbutamide.

CBRI, ROORKEE

Asbestos Cement Sheets—Asbestos cement sheets which do not conform to I. S. specification as regards to transverse strength cannot be used as roofing material. Studies carried out at the Institute for utilization of low-strength sheets have shown that if two sheets are doubled up with a layer of bitumen sandwiched between them the strength of the combination becomes more than the minimum requirement of a single sheet. The double sheet can easily replace the single sheet for all purposes including roofing material. Bitumen gives rigidity to the pair, absorbs shocks and provides water-proof layer.

Sponsored Research

Cavitation Tunnel— High-head hydraulic structures working under high velocities usually work unsatisfactorily on account of the phenomenon of cavitation. For a systematic study of this phenomenon a cavitation (water) tunnel has been installed.

The water tunnel (propeller type) is a vertical, closed circuit structure, 26 ft. long, 20 ft. high and 3 ft. in diam. The vertical circuitary in mild steel sheets consists of turns, test section, contraction cone, diffuser, deflection vanes, pump, heat exchanger, pressure control and speed control units. The test section is 3 ft. long, 1 ft. high and 0-5 ft. wide. The opposite sides of the section are made of plexi glass. The rectangular test section is inter-changeable by a circular one. The pressure in the test section is varied by the use of an air chamber and a vacuum pump.

The contraction cone provided in the circuit helps in gradual increase of velocity of water before it enters the test section. The cone gives high velocity and uniformity to water with minium turbulence area ratio at 9. The deflecting vanes ensure a uniform flow and prevent the loss of

Irrigation & Power Research Institute, Amritsar—Cavitation tunnel designed and constructed under a CSIR scheme

energy at the four corners of the water tunnel. The gap to chord ratio of vane is 0.35.

The water in the tunnel is circulated with the aid of cavitation-free, horizontal axial flow pump (24 in. × 24 in.) capable of giving discharge of 45 cusecs against a head of 19 ft.—H.L. UPPAL & T.C. PAUL, Irrigation & Power Research Institute, Amritsar.

Age of Rocks and Minerals—Systematic studies have been carried out on determination of age of Indian rocks and minerals.

A large number of specimens of igneous and metamorphic rocks have been studied for their radium and thorium contents, alpha activity, thorium/uranium ratio and radon leakage. Data collected from these studies have given useful information of geochemical aspects of distribution of uranium and thorium in rocks.

Geological ages of plutonic rocks and mineral specimens from the three major geological provinces of India, viz., the Dharwar, the Easter Ghats, and the Satpura have been measured by the following methods: (i) alphahelium, (ii) spectro-chemical, (iii) rubidium-strontium, (iv) lead-alpha and (v) argon. Age of Pegmatitic cycles associated with these formations have also been determined.

A simple pi-radian mass spectrometer has been constructed and employed for measuring the radiogenic purity of argon from potassium minerals in the determination of age by argon method. The instrument has also been employed for investigation of isotope abundance variations of potassium and lithium—R.S. KRISHNAN, Department of Physics, Indian Institute of Science, Bangalore.

Coke from High Volatile Coals—The possibility of preparing metallurgical grade coke from high-volatile poorly coking coals from South Karanpura and Raniganj coalfields in admixture with low-volatile coals from Jharia coalfield has been examined by conducting pilot oven tests.

Tests with blends of Argada Top seam coal (South Karanpura coalfield) in admixture with Mohuda Top seam and Choitodih 12 seam coals (Jharia coalfield) indicate that (i) medium hard coke (according to Breslau Index) can be obtained when the blends are in the ratio of 20 : 10 : 70 with grain size 80 per cent through $\frac{1}{8}$ in., (ii) hard coke can be obtained if the charging coal in the above proportion is crushed to grain size 100 per cent through $\frac{1}{8}$ in. The ash content of coke obtained from the blends is above 25 per cent.

Pilot oven test with blends of Dishergarh seam and Poniati seam (coals) Raniganj coalfield in admixture with Choitodih 12 seam coal (Jharia coalfield), having grain size of 80 per cent through $\frac{1}{8}$ in. indicate that the blend in the ratio of 50:20:30 produces medium hard coke. The ash content of the coke obtained from the blend is 22.23 per cent. The results of full scale oven test on the same blends carried out in Tatas' Commerical Coke Ovens are in conformity with those obtained in pilot oven test.

Blends (70 : 30) of Dishergarh seam coal and Choitodih 12 seam coal (grain size 80 per cent through $\frac{1}{8}$ in.) produce hard coke when selectively crushed—Coal Blending and Coking Research Sub-Committee, Jamshedpur.

Research Papers

Organic pesticides-Part I : Preparation of some fluoroaryloxy fatty acids and their mercury derivatives—K.C. JOSHI & S C. BAHEL, University of Gorakhpur, Gorakhpur. *J. Indian chem. Soc.*, **37** (1960), 365-66.

Rapid extraction and spectrometric determination of uranium (VI) with TTA—S.M. KHOPKAR & A.K. DE, Jadavpur University, Calcutta. *Analyst*, **85** (1960), 376-79.

Rapid extraction of iron (III) with TTA : Direct colorimetric determination in the organic phase—S.M. KHOPKAR & A.K. DE, Jadavpur University, Calcutta. *Analyt. chim. acta*, **22** (1960), 223-28.

Simultaneous extraction and spectrophotometric determination of cerium (IV) with TTA—S.M. KHOPKAR & A.K. DE, Jadavpur University, Calcutta. *Analyt. Chem.* **32** (1960), 478-80.

Extraction of chromium (III) with TTA : Direct colorimetric determination in the organic phase—S.K. MAJUMDAR & A.K. DE, Jadavpur University, Calcutta. *Analyt. Chem.*, **32** (1960), 1337-39.

PATENTS & PROCESSES

Applications Filed

INDIA

72851 ; *A modified process for preferential separation of the non-fatty constitutents and simultaneous purification of the seed lipids*—Y.C. Awasthi, C. Mitra & K. N. Kaul, NBG, Lucknow.

73066 : *Preparation of road tar, from primary tars*—B. S. Narayan Rao, R. Vaidyeswaran, D. P. Agrawal, M. Ehsan, M.G. Krishna & S. H. Zaheer, RRL, Hyderabad.

AUSTRALIA

63866 : *Improvements in or relating to the controlling of water evaporation, for conserving water in lakes and reservoirs*—(Miss) S.B. Kulkarni, M. K. Gharpurey, N. R. Sanjana, A.V. Deo, K.O. Abraham & B.C. Subba Rao, NCL, Poona.

Applications Accepted

66148 : *Improvements in or relating to lead dioxide semiconductor in the preparation of rectifiers*—H. V. Udupa, CECRI, Karaikudi.

67468 : *Improvements in or relating to the preparation and isolation of isonicotinic and nicotinic acids from the 'beta-picoline cut'*—A. Lahiri, H. S. Rao, A.P.R. Panicker & G.N. Kulsrestha, CFRI, Jealgora.

67821 : *A process for the production of fungicides from coal tar*—J.G. Saha, A.N, Basu & A. Lahiri, CFRI, Jealgora.

69690 : *Improvements in or relating to paints*—Atma Ram, S.B. Roy & H.S. Sircar, CGCRI, Calcutta.

Applications Sealed

64959 : *A process for the preparation of dihydrojasmone*—J.H. Amin & S.C. Bhattacharyya, NCL, Poona.

65556 : *A process for electrolytic production of iron-chromium alloys from chromite ore*—P.B. Chakravarti & T. Banerjee, NML, Jamshedpur.

Process Leased Out

The process for the production of Ethylene Dichloride (Indian Pat. No. 66836) developed by the National Chemical Laboratory, Poona, has been leased out for commercial exploitation to *Tata Chemical Ltd.*, Bombay.

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CSIR NEWS

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MEETINGS

Finance Sub-Committee, B.S.I.R. & Governing Body

Finance Sub-Committee	Oct. 16, 1960	1-Willingdon Cresent, New Delhi ; 9.00 a.m. Chairman : Shri Morarji Desai
Committee of B.S.I.R.	Nov. 3, 1960	CSIR Secretariat, New Delhi ; 10.00 a.m.
B.S.I.R.	Nov. 4, 1960	Ministry of External Affairs, Central Secretariat, New Delhi ; 11.00 a.m.
Governing Body	Nov. 5, 1960	Ministry of External Affairs, Central Secretariat, New Delhi ; 9.30 a.m.

Executive Council & Planning Committee

Indian Institute of Petroleum	Oct. 17, 1960	Minister's Room, Oil & Natural Gas Commission, Central Secretariat, New Delhi ; 11.00 a.m. Chairman : Shri K.D. Malaviya
Local Planning Committee, CPHERI, Nagpur	Oct. 17, 1960	CPHERI Delhi Field Centre, Delhi ; 3.00 p.m. Chairman : Prof. M.S. Thacker

Advisory Committee & Research Committee

Advisory Committee of Rain & Cloud Physics Research Unit	Oct. 19, 1960	Conference Room, NPL, New Delhi; 3.00 p.m. Chairman : Dr. K.R. Ramanathan
Civil Engineering & Hydraulics Research Committee	Oct. 26, 1960	CSIR Secretariat, New Delhi ; 10.00 a.m. Chairman : Shri Kanwar Sain

PERSONAL

- SHRI M.R.K. RAO has been appointed, on promotion, Senior Scientific Officer : Grade I, NML, Jamshedpur, with effect from Sept. 9, 1960.
- DR. S.N. CHATTERJEE has been appointed Senior Scientific Officer : Grade II, CFRI Jealgora, with effect from Aug. 16, 1960.
- SARVASHRI N. DHANANJAYAN, PERI PRABHAKARAM, S.K. BANERJEE & A.K. POTE have been appointed, on promotion, Junior Scientific Officers, NML, Jamshedpur, with effect from Sept. 8, 1960.
- SHRI R.C. MATHUR has been appointed, on promotion, Chemical Engineer, NML, Jamshedpur, with effect from Sept. 8, 1960.
- SHRI A.C. MAJUMDAR has been appointed Plant Engineer, CFRI, Jealgora, with effect from Aug. 1, 1960.
- SHRI N.C. SAHA has been appointed, on promotion, Junior Scientific Officer, CFRI, Jealgora, with effect from Aug. 1, 1960.

* * *

- DR. K.S. KRISHNAN, Director, NPL, New Delhi, left for Paris on Oct. 3, 1960 for attending the meetings of the *International Committee of Weights and Measures* and the *Eleventh General Meeting of Weights and Measures.*
- DR. G.S. SIDHU, Asst. Director, RRL, Hyderabad, who had been to West Germany for work at the Research Institute for the Chemistry of Wood and Polysaccharide, Heidelberg under Prof. K. Freudenberg returned to India and joined duty. The problems on which he worked are : Phenolic compounds and lignins of Beechwood, and Stereo-chemistry of some lignans.

(*Contd. on p. 2, col. 3*)

Shri Dinesh Mohan

Shri Dinesh Mohan has been appointed, on promotion, Deputy Director, CBRI, Roorkee, with effect from Sept. 17, 1960.

Born on July 14, 1922 (Meerut, U.P.), he obtained C.E. (Hons.) degree from Thomason College of Civil Engineering, Roorkee in 1943 standing first and winning the Council of India Prize. He joined the Public Works Department (Buildings and Roads), U.P. soon after. In 1945 he proceeded to U. K. on award of a two-year scholarship for research in civil engineering at the Road Research Laboratory and Building Research Station. On his return to India he was appointed Senior Scientific Officer and Planning Officer, CBRI, Roorkee and later in 1955 was promoted as Asst. Director and Head, Soil Mechanics and Foundation Engineering Division.

Shri Dinesh Mohan has published about 40 research papers in soil engineering. He is a member of the Institution of Engineers (India); National Society of Soil Mechanics and Foundation Engineering; and Syndicate, University of Roorkee.

Shri V. Aravamuthan

Shri V. Aravamuthan has been appointed, on promotion, Asst. Director, CECRI, Karaikudi, with effect from Aug. 23, 1960.

Shri Aravamuthan (*b.* Jan. 24, 1920, Pudukkottai town, Trichy Dt.) B. Sc. (Madras), A. I. I. Sc., served (1939-1944) as a lecturer in chemistry in various colleges after a bright academic career and joined the Indian Institute of Science, Bangalore as a staff member in 1944. In 1952 he joined the CECRI and has been incharge of the Division

(*Contd. on p. 2, col. 2*)

BRIEFS

Cellulose Research—Symposium II : 1958

The proceedings of the symposium on Cellulose Research, the second in the series, organised by the Cellulose Research Committee of the CSIR at the Forest Research Institute, Dehra Dun in 1958 have been published.

The 156-page publication includes 22 papers and 5 abstracts of papers grouped under the following heads : Cellulose physics, structure and physical properties of cellulose, chemistry and technology of cellulose, chemical pulp and rayon industry, and mechanical pulp with special reference to the paper industry. The papers give an idea of the advances made and problems awaiting solution in wood, pulp & paper, rayon and jute technology.

Copies of the publication (Price Rs. 12) are available from the Publications Directorate, CSIR, New Delhi-1.

Coir—Its Extraction, Properties & Uses

This 54-page monograph, prepared at the instance of the All-India Board of Technical Studies in Textile Technology, presents a consolidated account of the various aspects of coir technology such as extraction of coir; spinning of yarn; weaving of mats, mattings, mourzouks, rugs and carpets; dyeing and printing; and production of ropes, cordages and other coir products. Useful information on the structure and properties of coir fibre, utilization of coir waste, and marketing & trade in coir and coir products have been included.

Copies of the publication (Price Rs. 6) are available from the Publications Directorate, CSIR, New Delhi-1.

Research Fellowships

The following have been awarded CSIR Fellowships for research on projects noted against their names :

Senior Fellowships :

Sarvashri V. S. Chandra Sekhran & B. Ramanathan—*Investigation of secondary consolidation characteristics of black cotton soil* (College of Engineering, Guindy, Madras).

Junior Fellowships :

1. Shri Gurdip Singh Bajwa—*Terpenes and terpenoids* (Panjab University, Chandigarh).
2. Shri C. V. Reddy Sastri—*Investigation of Indian commercial timbers* (Andhra University, Waltair).
3. Shri Kewal Krishan Soni—*Thiocyanates and isothiocyanates* (Panjab University, Chandigarh).
4. Shri L. Ramachandra Rao—*Investigation of secondary consolidation characteristics of black cotton soils* (College of Engineering, Guindy, Madras).

* * *

The Director-General, Scientific & Industrial Research, has accepted the resignation of the following CSIR research fellows :

Senior Fellowship :

Shri Narayan Chandra Roy—*Catalytic conversion of tar acid, etc.*, University College of Science & Technology, Calcutta (Aug. 31, 1960).

Junior Fellowships :

1. Shri N.N. Kaura—*Atomization of fluid*, Indian Institute of Technology, Kharagpur.
2. Shri Gurdial Singh—*Studies in synthetic perfumes*, Punjab University, Chandigarh (Sep. 1, 1960).
3. Shri N. Appaji Rao—*Biosynthesis of coenzymes*, Indian Institute of Science, Bangalore (Aug. 31, 1960).
4. Shri D. K. Mazumdar—*Quantum mechanics of molecular interaction*, University College of Science & Technology, Calcutta (Aug. 8, 1960)
5. Shri H. S. Chhugani— *Standardisation of methods of soil analysis*, etc., Field Research Station, Bombay.

(*Contd. from p. 1, col. 3*)

of Electrothermics & Electrometallurgy since then.

He is the author of a large number of research papers in the fields of electrolysis, electrothermics and electrometallurgy and has taken a number of patents.

Shri Aravamuthan is an Associate of the Institute of Fuels (London), Indian Institute of Metals and a Member of the Electrochemical Society.

PERSONAL

(*Contd. from p. 1, col. 2*)

- Shri S.K. Majumdar, Senior Scientific Officer, CFRI, Jealgora, after completion of his training in Coal Preparation and Bulk Handling in U.S.A. under the T.C.M. Programme returned to India and joined duty with effect from Aug. 5, 1960.

* * *

- Shri V. Cadambe, Director, CMERI, Durgapur, has been nominated a member of the Development Council for Heavy Electrical Industries, Ministry of Commerce & Industry.
- Dr. T. Banerjee, Deputy Director, NML, Jamshedpur, has been nominated a member of the Panel of Experts in the trade of Electroplator for Engineering and Building & Non-Engineering trade constituted by the National Council for Training in Vocational Trades under the Directorate-General of Resettlement & Employment, Union Ministry of Labour and Employment.
- Shri A. Bose, Planning Officer, BITM, Calcutta, has been nominated a member of Technical Sub-Committee constituted by the Visvesvaraya Industrial Museum Society, Bangalore.
- Dr. M.U. Pai, Asst. Director, NCL, Poona, has been nominated a member of the Technical Sub-Committee for Liaision in Physical and Chemical Engineering and Human Factor Studies of the Central Arid Zone Research Institute, Jodhpur.
- The following officers have been nominated members of the Committee/Panel of the Indian Standards Institution.

Dr. G.N. Badami, Asst. Director, CMRS, Dhanbad—*Panel for Flame Proof Enclosures.*

Dr. J.S. Aggarwal, Asst. Director, RRL, Hyderabad—*Fixed Oils Lubricants Sub-Committee.*

Research Papers

Ion exchange separation of some light rare earths by elution with sodium triphosphate : II—Effect of *p*H of eluant—P.R. Subbaraman, K.S. Rajan & J. Gupta, NCL, Poona. *Z. anorg. allg. Chem.*, **304** (1960), 191.

Anion exchange studies of uranium (VI) in sulphate and carbonate solutions—S.M. Khopkar & A.K. De, Jadavpur University, Calcutta, *Anal. chim. Acta.*, **23** (1960), 147-51.

RESEARCH IN PROGRESS

National Laboratories

NPL, NEW DELHI

Frequency Standard—A portable frequency standard with stability of 1 part in million has been developed. The instrument comprises a GT cut quartz crystal operated in a modified 'Pierce' type transistorised oscillatory circuit and a six-volt dry cell power unit. The crystal is enclosed in a thermostatically controlled oven. The output signal is a pure 100 Kc/s sinosidal wave having an amplitude of 1.5 volts across 3,000 ohms load impedance. A variable tuning condensor has been provided in the instrument to adjust the crystal frequency. The instrument is light, compact and is well suited for *in situ* calibration of signal generators and signal measuring equipments.

NPL, NEW DELHI—Portable frequency standard designed and fabricated at the Laboratory

NML, JAMSHEDPUR

Structural Steels—A number of heats with varying compositions have been prepared and tested with a view to develop low alloy high tensile structural steels. A heat containing Cr, Mn, Si and V has shown high tensile strength of 92 ton/sq.in. under normal conditions. The ductility of the heat improves on oil quenching. Another heat with Cr, Mn, V and Cu as alloying elements showed under normal conditions tensile strength of 68 ton/sq.in. with ductility of over 20 per cent.

CGCRI, CALCUTTA

Plasters from Gypsum—Effect of impurities on the properties of plaster of Paris prepared from Indian gypsums have been studied. The impurity materials studied are those found in gypsums or formed during the calcination of gypsum.

Water above the normal consistency increases the setting time of plaster and greatly lowers the strength, density, hardness and linear expansion during setting of plaster. Calcium carbonate acts as a mild accelerator but shows little effect on the physical properties even when present in amounts up to 10 per cent. Anhydrite has similar effect but to a lesser degree than calcium carbonate. Both calcium carbonate and anhydrite adversely affect the durability of the moulds prepared from the plaster.

Sodium chloride and potassium sulphate when present as impurities, act as powerful accelerators and increase the normal consistency and linear expansion during setting of the plaster. Glue and borax reduce the normal consistency and linear expansion. However, the retarding effect of glue is much greater than that of borax. Addition of retarders after the optimum normal consistency is reached, results in increase of setting time and deterioration of other physical properties.

RRL, HYDERABAD

Carbonisation of Non-caking Coal Briquettes—Briquettes made from non-caking coal fines using lime-tar mixture as binder have been successfully carbonised by a process developed at the Laboratory.

The process consists in preheating the briquettes below 300°C. in an oxidising atmosphere, followed by low-temperature carbonisation. Optimum conditions of temperature, duration and rate of air for curing of the briquettes have been determined. Briquettes obtained have high compression strength, are highly reactive and completely water resistant.

A pilot plant (capacity 400 lb./day) is being installed for continuous curing and carbonisation of briquettes.

IIBEM, CALCUTTA

Leishmaniacidal Property of Nystatin—The effect of antifungal antibiotic, nystatin, has been clinically tested on a patient (age, 35 yrs male) suffering from dermal leishmaniasis. The patient (suffering for the last four years) had nodular formations on face and depigmentation in the inner side of arms.

The leishmania organism was isolated from the nodules, grown in N.N.N. medium and identified by microscopical and biochemical tests. After administration of mysteclin V (containing nystatin and tetracycline) orally for three days no living organism could be isolated from the nodules; general condition of the patient also improved—B.K. Ghosh, D. Haldar & A.N. Chatterjee.

RRL, JAMMU

Tetraploid Dioscorea deltoides—*Dioscorea deltoides*—a potent source of preparing diosgenin—found in temperate Himalayan region is a diploid (2n=20). As a result of studies undertaken at the Laboratory, a tetraploid (2n=40) race of the plant has been evolved by treatment of diploid with colchicine.

Sponsored Research

Mode of Action of Terramycin—Action of terramycin on animal nutrition and micro-organism has been studied.

Influence of terramycin on the behaviour of rat liver mitochondria was assessed from (i) their ability to carry out oxidative phosphorylations and (ii) the liability of intramitochondrial nucleotides. The basal group showed low rates of oxidation and phosphorylation and lowered P : O ratios; supplements of vitamin B_{12} and PGA or of terramycin in the diet increased these. A progressive decrease in the rate of release of nucleotides from mitochondria isolated from livers of terramycin fed rats is observed as compared to the control sets.

Terramycin (0.5μg./ml.) inhibited the growth of cells of *Escherichia coli* vitamin B_{12}/methionine auxotroph grown either in presence of vitamin B_{12} or methionine; inhibition was more in the latter case. The antibiotic had no effect on ribonuclic acid synthesis; the synthesis being more in the methionine grown cultures. The cessation of protein synthesis was accompanied by an increase in the levels of intracellular free amino acids particularly, glycine, serine, threonine, in the methionine grown cells.

Electrophoretic patterns of *E. coli* vitamin B_{12}/methionine auxotroph showed a marked alteration when the cells were grown in partially inhibiting levels of terramycin, indicating thereby the specific nature of interference by terramycin.

The thymine synthesising system observed in cell-free extracts (CF) of *Bacillus subtilis* has been purified by ammonium sulphate precipitation. It accounted for the total activity of cells in presence of adenosine monophosphate, succinate and heated extract.

In the absence of CF, thymine formation by *B. subtilis* cells was considerably reduced by exposure to terramycin for 30 min. and almost completely after 1 hr; the activity, however was not affected if the exposure to terramycin was carried out in presence of CF. The terramycin inhibition of PGA to CF conversion by the organism was proportional to the concentration of terramycin—A. SREENIVASAN & D. V. TAMHANE, Department of Chemical Technology, Bombay University Bombay.

Fatigue Test on Aircraft Alloys—Fatigue properties of aircraft quality aluminium conforming to specifications 248-T3 QQ—A-362 (U. S. Federal Specification) have been determined by performing a series of 300 fatigue and static tests at the Technical Centre, Safdarjang (New Delhi).

The test results indicate that axial load fatigue strength of 248-T3 and L-72 untouched sheet specimens at one million cycles with zero mean stress is 12,500 p.s.i. The scatter in the two alloys is similar and is of the order of 1 to 3, although 248-T3 shows better fatigue properties as compared to L-72 at high stresses.

A mechanical test rig for applying alternating loads to full size aircraft fittings and small aircraft components has been designed and constructed—S. RAMAMRITHAM & S. KUMAR, Civil Aviation Department, New Delhi.

PATENTS & PROCESSES

Applications Filed

73,065: *Improvements in or relating to the use of cashewnut shell liquid in surface coatings*—M.A. Sivasamban, B.G. Murthy, J.S. Aggarwal & S.H. Zaheer, RRL, Hyderabad.

73,067: *A process for the utilization of Indian indigenous asbestos of amphibole variety alone or in an admixture with chrysotile variety in the manufacture of asbestos cement sheets, and similar materials*—N. Biswas, S. N. Mukherjee, S. K. Majumder, N.G. Banerjee, P. B. Dutta & A. Lahiri, CFRI, Jealgora.

Applications Accepted

65,891: *A process for the conversion of coal tar or coal tar fractions to high speed diesel oil and gasoline*—S.K. Bose, N.G. Basak, A. Ganguly & A. Lahiri, CFRI, Jealgora.

66,293: *A process for the production of anthraquinone*—C.S.B. Nair, A. N. Basu & A. Lahiri, CFRI, Jealgora.

Applications Sealed

INDIA

64,958: *Improvements in or relating to polishing compositions*—S.M. Shah, V.K. Hinge, V.V. Mhaskar & R. C. Shah, NCL, Poona.

66,294: *Improvements in or relating to electrode holders for manual arc welding*—G. S. Chowdhury, G. C. G. Reddy, M. K. Chary & S.H. Zaheer, RRL, Hyderabad.

USA

2,946,783: *Preparation of costus root oil and the production thereof*—G.R. Kelkar & S.C. Bhattacharyya, NCL, Poona.

FRANCE

1,208,243: *A process for the preparation of tridecane-1:13-dicarboxylic acid or its ester, suitable for the preparation of exaltone (cyclopentadecanone)*—B.B. Ghatgey, U.G. Nayak, K. K. Chakravarti & S. C. Bhattacharyya, NCL, Poona.

U. K.

11,417/58: *A process for the preparation of azelaic acid semiester suitable for making civetone dicarboxylic acid*—U.G. Nayak, K.K. Chakravarti & S.C. Bhattacharyya, NCL, Poona.

CUBA

1,49,082: *Manufacture of nicotine sulphate from tobacco or tobacco wastes*—J. Gedeon & M. Goswami, NCL, Poona.

NEW PUBLICATIONS

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CSIR NEWS

VOL. 10 NEW DELHI—OCT. 24, 1960 : KARTIKA 2, 1882 No. 20

LIBRARY

Symposium on Physics of Cloud & Rain in the Tropics

A symposium on Physics of Cloud & Rain in the Tropics will be held at the Meteorological Office, Poona, from Oct. 29 to Nov. 1, 1960 under the joint auspices of the Council of Scientific & Industrial Research, India Meteorological Department, Indian Air Force (Meteorological Branch) and the Indian Meteorological Society.

Prof. M.S. Thacker, Director-General, Scientific & Industrial Research, will inaugurate the symposium, and Prof. K.R. Ramanathan, Director, Physical Research Laboratory, Ahmedabad and Chairman of the Advisory Committee for Rain & Cloud Physics Research of the CSIR, will preside. About 40 papers pertaining to the various aspects of subject will be presented and discussed. Scientists of repute and a number of delegates of State Governments interested in the subject are expected to participate in the symposium.

MEETINGS

A meeting of the *Committee* of the *Board of Scientific & Industrial Research* will be held at the CSIR Secretariat, New Delhi on Nov. 3, 1960 at 10.00 a.m. Lala Shri Ram will preside.

A meeting of the *Board of Scientific & Industrial Research* will be held at the Ministry of External Affairs, Central Secretariat, New Delhi on Nov. 4, 1960 at 11.00 a.m. Shri Jawaharlal Nehru, Prime Minister, will preside.

A meeting of the *Governing Body* will be held at the Ministry of External Affairs, Central Secretariat, New Delhi on Nov. 5, 1960 at 9.30 a.m. Shri Jawaharlal Nehru, Prime Minister, will preside.

PERSONAL

●**Dr. S.P. Sharma** has been appointed Senior Scientific Officer : Grade I, CBRI, Roorkee, with effect from Sept. 26, 1960.

●**Shri M. Ramaiah** has been appointed Senior Scientific Officer : Grade II, CBRI, Roorkee, with effect from Sept. 13, 1960.

●**Dr. A.F. Chhapgar** has been appointed, on promotion, Senior Scientific Officer : Grade II, NPL, New Delhi, with effect from June 20, 1960.

●**Shri B.C. Gulati** has been appointed Senior Scientific Officer : Grade II, CIMPO, New Delhi, with effect from Oct. 1, 1960.

●The news item pertaining to Shri Ratan Singh published under the head 'Personal' of the *CSIR NEWS*, Vol. 10, No. 18, p.l should read as follows : Shri Ratan Singh has been appointed, on promotion, Electrical Engineer, NML, Jamshedpur with effect from Aug. 16, 1960.

* * *

●**Dr. B. Mukerji**, Director, CDRI, Lucknow, after attending the Fifth International Congress in U.S.A., on Effects of Processing and Additions on the Nutritive Values of Food, returned to India and joined duty with effect from Sept. 18, 1960.

●**Dr. D.L. Shrivastava**, Deputy Director, CDRI, Lucknow, returned to India from U.S.A. and joined duty with effect from Sept. 30, 1960 after attending the symposium on Immuno-chemical Approaches to Problems in Microbiology.

●**Dr. Atma Ram** has been nominated a member of the Advisory Committee of the Harcourt Butler Technological Institute, Kanpur.

●**Lt.-Gen. H. Williams**, Director, CBRI, Roorkee, has been nominated a member of the Central Board of Railway Research, Ministry of Railways.

●**Dr. B. Mukerji**, Director, CDRI, Lucknow has been nominated a member of the Advisory Board on Forest Utilization, U.P.

(*Contd. on p. 2, col. 1*)

Shri K.D. Sharma

Shri Kapil Dev Sharma has been appointed, on promotion, Deputy Director, CGCRI, Calcutta, with effect from Aug. 23, 1960.

Shri Sharma (*b*. July 1920) after graduation from the Punjab University obtained the degree of B.Sc. (Tech.) in Glass Technology, standing first in order of merit, from the Banaras Hindu University. He worked in the glass industry for some time, and proceeded to U.K. for higher studies as a Government of India scholar and obtained the degree of M.Sc. (Tech.) in Glass Technology from Sheffield University ; he also worked in the glass plants of *Rockware Glass Ltd.*, Greenford, U.K. and *Karhula Lasitehdas*, Finland. He returned to India in 1948 and joined the CGCRI. He has been associated with the planning and development of the Institute from almost the beginning. During 1953-54 he worked at the Glass Section of the National Bureau of Standards, U.S.A. as a guest worker. Some of the important projects he was associated with include the development of foam glass, glass furnaces, glass moulds, titania glasses, designing of glass containers, improvement in the quality of glass products and raw materials and most important of all, the studies on the production of optical glass and setting up of a commercial scale plant for its production. In 1959, he visited the U. S. S. R. as a member of the Government of India Team for the Optical and Ophthalmic Glass Project.

Shri Sharma is Hony. Secretary of the Indian Section of the Society of Glass Technology and is closely associated with several Committees of the Indian Standards Institution.

BRIEFS

Research Fellowships

The following have been awarded *CSIR Fellowships* for research in schemes noted against their names :

Senior Fellowship :

Shri S.H. Ibrahim—*Pilot plant preparation of ethylene oxide and its products* (Indian Institute of Science, Bangalore).

Junior Fellowships :

1. Shri L.O. Patel—*Fundamental study of the interaction between soils, etc.* (Field Research Station, Bombay).
2. Shri A.K. Modi—*Fixing suitable specifications for assessing the suitability of different soils for brick burning* (Field Research Station, Bombay).
3. Shri C.L. Rustagi—*Chromogenic factors of cotton and* Pongamia *oils* (University of Delhi, Delhi).
4. Shri S.K. Varma—*Automization of fluids* (Indian Institute of Technology, Kharagpur).

Research Schemes Terminated

The following schemes have been terminated with effect from the dates noted against their names :

1. *Polarographic investigation of known solid complexes*—Dr. A.B. Sen, Lucknow University, Lucknow (July 16, 1960).
2. *Investigation on steroids*—Dr. B K. Bhatacharyya, Jadavpur University, Calcutta (Oct. 31, 1960).
3. *Chemical and pharmacological investigation of* Ervatamia coronaria *and other species*—Dr. N.K. Basu, Banaras Hindu University, Varanasi (Oct. 31, 1960).

PERSONAL

(*Contd. from p. 1, col. 2*)

●Prof. K.N. Kaul, Director, NBG, Lucknow, has been nominated a member of the Garden Advisory Committee of the U P. Government.

●The following officers have been nominated members of the Committee/Panel of the Indian Standards Institution :

Director, CMRS, Dhanbad or his representative and Shri P.P. Bhatnagar, Asst. Director, NML, Jamshedpur—*Wire Ropes and its Accessories Sub-Committee.*

Dr. G.S. Siddappa, Asst. Director (Principal Member) and J.S. Pruthi, Senior Scientific Officer (Alternate Member), CFTRI, Mysore—*Fruit and Vegetable Sectional Committee.*

Dr. L.A. Ramdas, Asst. Director, NPL, New Delhi—*Forced Ventilation Sub-Committee.*

Shri J.V. Nagaraja, Senior Scientific Officer (Principal Member) and Shri K.C. Srivastava, Junior Scientific Officer (Alternate Member), NPL, New Delhi—*Methods of Physical Tests Sectional Committee.*

Maj. N.V.R. Iyengar, Senior Scientific Officer, CFTRI, Mysore—*Polythene Films and Laminate Sub-Committee.*

Shri J.B. Rao, Senior Scientific Officer, CLRI, Madras—*Heavy Leather Sub-Committee* (Convenor).

Dr. M.L. Khanna, Senior Scientific Officer, NPL, New Delhi—*Greases and Graphited Lubricants Sub-Committee* and *Gear, Transmission and Axle Oils Sub-Committee.*

Shri T.D. Bansal, Junior Scientific Officer, NPL, New Delhi—*Panel for Thermometers* (Convenor).

* * *

●Shri H.N. Anand, Senior Scientific Officer, CBRI, Roorkee, has been elected an Associate Member of the *American Society of Civil Engineers.*

●Dr. N.K. Patwardhan, Asst. Director, CBRI, Roorkee, has been recognised a teacher of the Poona University for imparting instructions to post-graduate students in chemistry (by research) from the academic year 1960-61.

* * *

●Dr. N.K. Bose, Reader in Chemical Engineering, College of Engineering and Technology, Bengal, has been approved as Investigator-in-charge of the scheme, *Pressure leaching of copper ores, etc. vice* Dr. T.K. Roy.

●Prof. S.K. Mukherjee & Dr. A.K. Sircar have been approved as Co-Investigators-in-charge, with Dr. D. Banerjee, of the research scheme, *Mechanism of vulcanization of rubber* (Indian Association for the Cultivation of Science, Jadavpur).

●Dr. Vishnu Mittre has been appointed Investigator-in-charge of the scheme, *Polynological investigation of quarternary deposits of Kashmir* (Birbal Sahni Institute of Palaeobotany, Lucknow) *vice* Dr. Lakhan Pal.

●Dr. O.D. Gulati, Department of Pharmacology, Medical College, Baroda, will supervise the scheme, *Pharmacological Research Unit*, in the absence abroad of Dr. A.D. Joseph.

Dr. G.S. Siddappa

Dr. G.S. Siddappa has been appointed, on promotion, Asst. Director, CFTRI, Mysore, with effect from Sept. 6, 1960.

Dr. Siddappa (*b.* 1906) got his Honours degree in Chemistry in First Class with University Gold Medal from the Presidency College, Madras (1930) and joined the Biochemistry Department of the Indian Institute of Science, Bangalore. In 1933, he was deputed to U.K. by the Madras Government for advanced studies in Biochemistry and Fruit & Vegetable Technology at the Campden Research Station, University of Bristol and Low Temperature Research Station, University of Cambridge. On returning to India (1937) he was appointed Lecturer in Fruit & Vegetable Preservation in the Agricultural College, Lyallpur. In 1943, he joined the Madras Agricultural Service and had been Biochemist-in-charge, Fruit & Vegetable Preservation Investigations, Kodur ; Superintendent, Government Malt Factory, Coimbatore ; and Government Agricultural Chemist, Coimbatore.

He joined the CFTRI as Senior Scientific Officer in December 1950. During 1955-56, he had been to Australia for a study tour of the food processing industries under the Colombo Plan.

Dr. Siddappa is the author of about 200 research papers pertaining to fruit & vegetable technology and a co-author of a monograph on 'Fruit & Vegetable Preservation'.

Research Papers

Indian asbestos—A.K. Chatterji, K.D. Dhariyal & N.K. Patwardhan, CBRI, Roorkee. *Chem. Age Bombay*, **2** (3) (1960), 369-78.

The analysis of prestressed trusses with rigid joints—G.S. Ramaswamy, N.V. Raman & R.N. Bhargava, CBRI, Roorkee. *Civil Engg. Public Works Rev.*, **55** (648) (1960), 915-17.

Vertical side windows for daylighting—R.C. Jain & T.N. Seshadri, CBRI, Roorkee. *Indian Architect*, **2** (8) (1960), 13-21.

The resonator and output couplers for a wide tuning range inverted magnetron—Amarjit Singh, N.C. Vaidya, R.A. Rao. K. Chandra & G.S. Sidhu, CEERI, Pilani. *J. Instn telecomm. Engrs* **6** (4) (1960).

RESEARCH IN PROGRESS

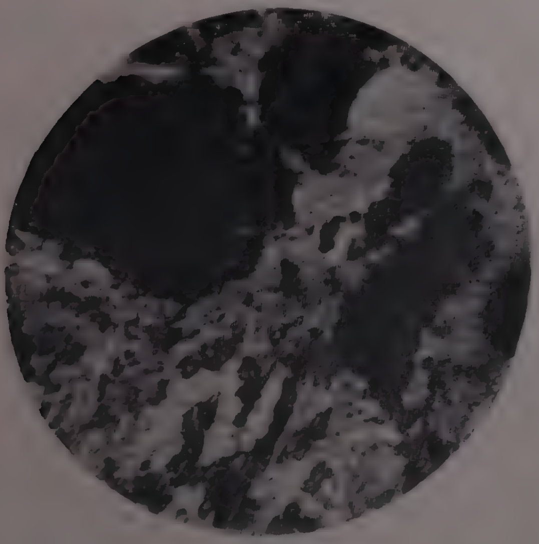
National Laboratories

CGCRI, CALCUTTA

Red Glasses—The effect of minor constituents such as tin oxide, tin, zinc, aluminium, magnesium, fluorspar, arsenic oxide, copper phosphide and bismuth oxide on the brightness and uniformity of red colour in copper containing soda-lime-silica glass has been studied. Use of copper phosphide in place of cuprous oxide or of arsenic oxide showed no improvement. Of the four reducing agents (aluminium, magnesium, silicon and zinc) silicon is most effective. Tin oxide (0 3 to 0.5 per cent) helps in giving better shades of colour, but in higher amounts it gives a blackish red colour. Small amounts of bismuth oxide are advantageous in producing uniform red colour. Addition of small amount of fluorspar produces bright red and seed free glass and shortens the striking period.

CFRI, JEALGORA

Microscopic Studies of Coke—Microscopic studies of Indian coke under reflected light have been undertaken to evaluate their suitability for metallurgical purpose. A coke sample prepared from straight coal has been found to have a porosity index of 55 5 per cent with average pore diam. of 0.275 mm. and average thickness of cell wall, 0 255 mm. The anisotropic nature of the polished coke surface when examined under polarized light indicates uniform distribution of different coal types in a coke sample prepared from a coal blend; the dark and the illuminated portions indicating the pore and cell wall respectively. The cell walls constitute the actual coke mass—S. BANERJEE, T.N. BASU & N.N. DAS GUPTA.



CFRI, JEALGORA—Microphotograph of polished coke surface under polarized light

CDRI, LUCKNOW

Peruvoside— Pharmacological studies on peruvoside—a glycoside isolated from *Thevetia neriifolia* Juss, have been carried out. It produces positive inotropic effect on hypodynamic heart. On perfusion into cats, the drug produces ECG changes typical of a cardiac glycoside. It develops emesis in pigeons and has musculotropic activity on other smooth muscles. It is a highly active glycoside with lethal dose of 147.4 μg/kg ± 6.6 in cats, 709.9 μg/kg ± 58.9 in guineapigs and 203.2 μg/kg ± 22.7 in pigeons. The drug is well absorbed quickly from the gastro intestinal tract and has a very short lag period between administration and cardiac activity. The duration of action of the drug is rather short and cumulative toxicity is low.

CECRI, KARAIKUDI

Preparation of Dialdehyde Starch—A process for the preparation of dialdehyde starch from tapioca starch has been worked out. Suitability of the product for leather tanning is under examination.

The process consists in electrolytically oxidising iodic acid to periodic acid at a lead dioxide anode and using the latter for oxidising the tapioca starch to dialdehyde starch separately under controlled conditions of oxidation. The iodic acid thus formed is reoxidised in the electrolytic cell—R. RAMASWAMY, M.S. VENKATACHALAPATHY & H. V. K. UDUPA.

RRL, HYDERABAD

Growth of Bacteria—Systematic study on the growth of *Pseudomonas fluorescens* has shown that the time, Tm, required for bacterial mass to double itself during the exponential growth phase, falls continuously as the population density in the culture increases. The finding is in contrast to Tn, time taken for the number of bacteria to double themselves, which remains constant. The observations suggest that the metabolic activity of individual cells in an exponentially growing culture progressively decreases and is a function of the concentration of the cells in the medium. It is concluded that the 'cell concentration effect' may be a factor responsible for regulating growth in multicellular systems.

The study also indicates that under certain conditions neither the accumulation of toxic products nor the exhaustion of a nutrient (including oxygen) could be a factor limiting growth of the microorganism. The continuous decline in the metabolic activity per cell during growth may be the factor responsible for the ultimate cessation of growth of bacteria.

RRL, JAMMU

Psoralea corylifolia—Extractives isolated from the seeds of *Psoralea corylifolia* have been found to be highly bacteriostatic against *Staphylococcus aureus*. They are equally active against penicillin resistant, streptomycin resistant and tetracycline resistant strains of *S. aureus*. They are also active against some of the saphrophytic and plant pathogenic fungi.

Natural Tetraploidy in Rauvolfia—*Rauvolfia serpentina* is a diploid species with 2n=22 chromosomes. Two tetraploid plants with 2n=44 chromosomes have been discovered for the first time in a field of seedlings grown at the Laboratory. These had broader and thicker leaves and larger flowers than the diploid. The discovery of a natural tetraploid in *R. serpentina* may be useful for the cultivation of improved varieties of this important medicinal plant.

Sponsored Research

Experimental Diabetes— In the course of study on the etiology and prevention of experimental diabetes, role of sodium acetoacetate (an intermediary fat metabolite) in carbohydrate metabolism has been investigated. The study has shown that acetoacetate develops hyperglycemia and other diabetic symptoms in experimental animals. Study of the effect of acetoacetate on the ascorbic acid content of tissues of scorbutic guineapigs and on the GSH values of blood of experimental animals suggest that it may be an important factor for the onset of diabetes.

The effect of acetoacetate upon the enzymes (plasma alkaline phosphatase and hexokinase) related to carbohydrate metabolism has been studied. It is observed that in contrast to alloxan and dehydroascorbic acid hyperglycemia, the plasma alkaline phosphatase activity decreases in acetoacetate induced hyperglycemia. The enzyme activity which decreases in scorbutic animals is further decreased in animals injected with sodium acetoacetate. Acetoacetate has been found to inhibit the hexokinase activity in rat leg muscle in *in vitro* and *in vivo* reactions.

Prevention of experimental diabetes has been observed with glucose cycloacetoacetate which is a precursor of ascorbic acid—M. C. NATH, Department of Biochemistry, Nagpur University, Nagpur.

Preservation of Fruits and Vegetables— Investigations have been carried out on the varietal suitability of fruits and vegetables for preservation. Several varieties of mango, pineapple, orange, tomato, cabbage and pea have been studied.

Of the three important varieties of mango, viz. Fazli, Langra and Himsagar, available in West Bengal, the Himsagar variety gives the best canned product from the point of view of retention of colour, flavour, texture, taste and also β-carotene content. Of the two varieties (Giant Queen and Queen) of pineapples studied, the Giant Queen gives better canned product. The studies on canned orange segments of Nagpur and Darjeeling varieties, peeled by acid and lye treatment, showed that lye peeling gives better canned product. Ascorbic acid retention and taste of orange segments are better with lye peeling.

The varieties of tomatoes studied are: Hybrid, S-20, Bonny Best, Suthon's best and Marglobe. The best canned pulp from the point of view of retention of colour, flavour and vitamin C content is obtained from the Marglobe variety. Of the fifteen varieties of peas studied for canning, only three varieties namely, NP 29 IARI, K-Alderman and Hybrid, yielded good canned product in regard to their retention of colour, flavour and texture. English Ball variety of cabbage has been found best fof canning—A.N. BOSE, Food Technology Division, Jadavpur University, Jadavpur.

PATENTS & PROCESSES

Application Filed

73576: *A simple specific gravity indicator for use in heavy medium coal washing*—A.K. Chakravarti, A.G. Saha, P. Chatterjee. G.G. Sarkar & A. Lahiri, CFRI, Jealgora.

Applications Accepted

65796: *Improvements in or relating to the suspension polymerization of vinyl monomers*—R.M. Joshi & S.L. Kapur, NCL, Poona.

66804: *A process for the conversion of peruvoside to ruvoside*—S. Rangaswami & E.V. Rao, Andhra University, Waltair.

66836: *Manufacture of ethylene dichloride*—S.C. Banerjee, S.L. Phatak, M.U. Pai & L.K. Doraiswamy, NCL, Poona.

Applications Sealed

INDIA

66096: *A process for the production of bacterial diastase*—I. Babbar, R.M. Rekhi & M.C. Srinivasan, NCL, Poona.

U.K.

12323/58: *New stainless steels and methods of preparing them*—B.R. Nijhawan, P.K. Gupte, S.S. Bhatnagar & B.K. Guha, NML, Jamshedpur.

Processes Leased Out

The following processes developed by the National Chemical Laboratory, Poona have been leased for commercial exploitation to *Unichem Laboratories*, Bombay.

1. *Hexylresorcinol* (Indian Pat. No. 57888)
2. *4-Hydroxycoumarin and its derivatives* (Indian Pat. Nos. 62890 & 63083)
3. *Diethylstilbestrol* (Indian Pat. Nos. 60826 & 65778).

Demineralisation of Indian Coals— Studies on demineralisation of Indian coals (unsuitable for metallurgical purposes due to high mineral content) have been carried out by phase exchange method. The coal sample (ash, 39 per cent) studied was obtained from the Bermo Seam of the East Bokaro coalfield.

The method consists in mixing finely powdered coal with water and diesel oil and separating the enriched coal and mineral matter in two phases. It has been found that appreciable demineralisation takes place with the coal having particle size below 65 mesh (Tyler Standard Sieve) and by employing a paraffinic diesel oil fraction of 280°-320°C. distillation range. Appreciable agglomeration has been observed in coal particles while agglomeration of mineral particles is negligible.

The demineralisation experiments have been carried out under both dry and wet milled conditions, and in the latter case the oil consumption is found to be reduced although the efficiency of separation does not improve. Violent agitation of the coal-water slurry before addition of oil enables a recovery of about 75 per cent of the original coal in the form of enriched produce having 13.7 per cent ash (as against the required limit of about 17 to 18 per cent)—S. BHAGAVANTAM, Indian Institute of Science, Bangalore.

Surge Generator —A recurrent surge generator (rate of repetition 50 per second) capable of producing impulse voltages up to a maximum of 9 kV. has been constructed.

Surge voltage distributions in a 33 kV. 2000 kVA (crossover type) and 3000 kVA (disc type) generator have been studied with 1/50 and 0.5/500 us waves. Voltage distribution due to chopped waves (chopped at different instants from 0.75 to 10 us) in a uniform, reinforced and interleaved windings has been recorded. Preliminary study of these oscillograms shows that instant of chopping and steepness of chopping the wave have a considerable influence on the stresses produced in the transformer. The instant of chopping for producing maximum inter-turn stress depends upon the type of winding. In an interleaved winding the stresses due to chopping and frequency of oscillations are higher.

Sensitivity of neutral current method of fault detection and location has been studied by producing artificial faults at different points along the winding. The problem of transferred surges and termination of terminals not under test during impulse testing of transformer have also been studied—D.J. BADKAS, Department of Power Engineering, Indian Institute of Science, Bangalore.

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R. N. 4212/5

CSIR NEWS

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GOVERNING BODY DECISIONS

The Board of Scientific & Industrial Research and the Governing Body of the Council of Scientific & Industrial Research met in New Delhi on Nov. 4 and Nov. 5, 1960 respectively. The Prime Minister, Shri Jawaharlal Nehru, presided.

New Institutes and Centres

The Governing Body approved the plan for the establishment of the Central Scientific Instruments Organization at an estimated capital cost of Rs. 71.75 lakhs. The scope and functions of the Institute of Petroleum drawn up by the French experts was also approved.

Establishment of a Mica Research Unit in the Central Glass & Ceramic Research Institute at an estimated capital cost of Rs. 8.54 lakhs was approved. The Unit will undertake systematic study of properties of mica, development of mica products, and utilization of waste mica and other allied problems of industry.

The establishment of a Regional Coal Survey Station of the Central Fuel Research Institute for conducting chemical and physical survey of coal deposits of Jammu & Kashmir State and a Field Unit of the Central Glass & Ceramic Research Institute for undertaking research on glass, ceramic and mineral deposits of the State at the Regional Research Laboratory, Jammu have been approved.

Pilot Plants

Setting up of the following pilot plants for the manufacture of (i) syntans at the Central Leather Research Institute; (ii) briquettes from Kashmir lignite at Srinagar under the supervision of the Central Fuel Research Institute; (iii) lead dioxide electrodes at the Central Electrochemical Research Institute; (iv) magnesium and magnesium powder at the National Metallurgical Laboratory; and (v) a plant for the recovery of tar acids from ammoniacal liquor at the Regional Research Laboratory, Hyderabad, was approved.

The Publications Committee of the CSIR has been entrusted with the responsibility for the publication of Monographs on Botanical subjects, sponsored by the CSIR.

Thirteen retiring research scientists have been sanctioned financial assistance for pursuing research work (p. 4).

Symposia & Seminars

Approval was given to the holding of the following symposia, seminars and conference during the year :

SYMPOSIA :

1. *Load bearing capacity of soils*—Central Building Research Institute, Roorkee.
2. *Light metal industry in India*—National Metallurgical Laboratory, Jamshedpur.
3. *Development of research results*—Central Road Research Institute, New Delhi.
4. *Briquetting and low-temperature carbonization of non-caking coals*—Regional Research Laboratory, Hyderabad.

SEMINARS :

1. *Collagen*—Central Leather Research Institute, Madras.
2. *Electrochemistry*—Central Electrochemical Research Institute, Karaikudi.

CONFERENCE :

Building materials—Central Building Research Institute, Roorkee.

Manufacture of Oil Seal Leather—Demonstration at CLRI

A practical demonstration of the process of manufacture of oil seal leather by chrome retan method will be held at the Central Leather Research Institute, Madras during Nov. 21 to Dec. 12, 1960. Automobile and engineering industries interested in the know-how of the process may send their representatives for attending the demonstration at the Institute.

NISI Bhatnagar Medal Awarded to Dr. Atma Ram

Dr. Atma Ram, Director, CGCRI, Calcutta, has been awarded the *Shanti Swarup Bhatnagar Medal* for 1959 by the National Institute of Sciences of India (NISI) for his outstanding contributions to the development of technology and creating a science-consciousness in the glass and ceramic industries in the country.

The medal instituted by the NISI in memory of Late Dr. Shanti Swarup Bhatnagar is to recognize contribution in the field of applied sciences and is preferably awarded to an Indian scientist. Dr. Atma Ram is the first recipient of the award.

PERSONAL

●SHRI K.C. GOVEL has been appointed, on promotion, Principal Engineer Officer, CSIR, New Delhi, with effect from Nov. 5, 1960.

●SHRI A. BHARADWAJ has been appointed, on promotion, Architect, CSIR, New Delhi, with effect from Nov. 5, 1960.

●DR. S.R. SRINIVASAN has been appointed, on promotion, Senior Scientific Officer : Grade I, CFRI, Jealgora, with effect from Sept. 8, 1960.

●SHRI S.K. BOSE has been appointed, on promotion, Senior Scientific Officer : Grade I, CFRI, Jealgora, with effect from Sept. 8, 1960.

●DR. M.M. SONDHI has been appointed Senior Scientific Officer : Grade I, CEERI, Pilani, with effect from Oct. 1, 1960.

●SHRI K.P. RAMAKRISHNAN has been appointed Senior Scientific Officer : Grade I, NAL, Bangalore, with effect from Aug. 31, 1960.

(*Contd. on p. 2, col. 2*)

BRIEFS

Symposium on Electrical Machine Design

A three-day symposium on Electrical Machine Design sponsored by the Electrical and Mechanical Engineering Research Committee of the CSIR concluded at the P.S.G. College of Technology, Coimbatore, on Oct. 15, 1960.

Prof. G.R. Damodaran, Principal, P.S.G. College of Technology and the Convener of the symposium welcomed the delegates and outlined the recent advances in the field of electrical machine design.

Prof. M.S. Thacker, Director-General, Scientific & Industrial Research, while inaugurating the symposium stressed the need for co-operative research between CSIR and private industry and between academic institutions and private industry. He expressed the hope that the symposium would result in the fruitful utilization of the knowledge gained therein for the improvement of electrical machine industry in the country.

Twenty-six technical papers presented and discussed at the symposium covered the following aspects : Analysis and optimum design of machines, materials and thermal problems, construction techniques, speed control and new energy conversion devices. These included contributions from U.K., U.S.A., Australia, West Germany, East Germany and United Arab Republic.

A large number of delegates from academic institutions and industrial establishments including Prof. Dr. H. Stamm, Rektor of Hochschule für Elektrotechnik, East Germany and Prof. Paul D. Agarwal, University of Massachusetts, U.S.A. took part in the symposium.

Cecrinagar

Prof. M.S. Thacker, Director-General, Scientific & Industrial Research, during his visit to the CECRI, Karaikudi, on Oct. 14, 1960, named the Central Electrochemical Research Institute Campus consisting of the Institute and its colony as 'CECRINAGAR'. The Campus falls under the Postal Zone 'Karaikudi-3.'

CSRI 'Open Day'

The Central Salt Research Institute, Bhavnagar observed Sept. 18, 1960 as 'Open Day'. A large number of visitors to the Institute attended the practical demonstrations of processess developed at the Institute.

PERSONAL

(Contd. from p. 1, col. 3)

●Shri M.A. Ramaswamy has been appointed Senior Scientific Officer : Grade II, NAL, Bangalore, with effect from Aug. 1, 1960.

●Shri A.C. Mukherjee has been appointed Senior Scientific Officer : Grade II, CMERI, Durgapur, with effect from Oct. 1, 1960.

●Shri K S. Lakshminarayanan has been appointed, on promotion, Junior Scientific Officer, CMERI, Durgapur, with effect from Aug. 4, 1960.

●Sarvashri V. S. Narasimhachar, R.N. Mukherjee, R N. Tarafdar, S. Ramnathan & K.P. Mukherjee have been appointed, on promotion, Junior Scientific Officers, CMRS, Dhanbad with effect from Oct. 19, 1960.

●Shri V.S. Narayana has been appointed, on promotion, Junior Scientific Officer, CMRS, Dhanbad with effect from Oct. 24, 1960.

●Shri A.V. Subramanyam has been appointed, on promotion, Junior Scientific Officer, NML, Jamshedpur, with effect from Oct. 1, 1960.

●Shri M. Sebastian has been appointed Purchase Officer, NAL, Bangalore, with effect from Sept. 21, 1960.

●Shri P.V.N. Acharya, Junior Scientific Officer, RRL, Assam, relinquished charge of his post with effect from Aug. 27, 1960.

* * *

●Prof. K.N. Kaul, Director, NBG, Lucknow, who had been to U.S.S.R. at the invitation of the *Academy of Sciences*, U.S.S.R. returned to India and resumed duty with effect from Nov. 2, 1960. Prof. Kaul also visited U.K.

●Shri V.M. Bhuchar, Junior Scientific Officer (Division of Analytical Chemistry), NPL, New Delhi, after completion of his 14 months' training in Modern Instrumental Methods in Chemical Analysis at the National Chemical Laboratory, Teddington and Imperical College of Science and Technology, London, under the Colombo Plan resumed duty with effect from July 4, 1960.

Moudgill Prize Awarded to Shri Joglekar

Shri G. D. Joglekar, Asst. Director, NPL, New Delhi, has been awarded the *K. L Moudgill Prize* for 1960 by the Indian Standards Institution for his outstanding contributions involving original work, essential for the preparation of a number of Indian Standards. His researches have provided basic data required for the development of Indian Standard Specifications for primary and secondary cells and batteries, carbon brushes for electrical machines, black lead pencils, graphite for pencil slips and methods for dry sieving.

Shri G. D. Joglekar, Asst. Director, NPL, receiving the K. L. Moudgill Prize from the Vice-President of India at the ISI convention held on Oct. 31, 1960

RESEARCH IN PROGRESS

National Laboratories

NML, JAMSHEDPUR

Production of Low Carbon Ferro-chrome—Low carbon ferro-chrome containing 65-75 per cent chromium and less than 1 per cent carbon is generally produced in a series of steps using a number of arc furnaces. Studies carried out on production of low carbon ferro-chrome from high carbon ferro-chrome by the addition of ferro-silicon to molten high carbon ferro-chrome have shown that carbon is gradually eliminated and chrome silicide containing low carbon can be obtained. Using this chrome silicide for desiliconisation, a method has been evolved for production of standard grade low carbon ferro-chrome. The method consists in heating in an indirect arc furnace a mixture of chrome ore and limestone and adding chrome silicide gradually to the fused mass.

CFRI, JEALGORA

Nahorkatiya Crudes—Cracking of a fraction of Nahorkatiya crude oil, boiling between 350°-400°C., has been studied over a synthetic silica-alumina catalyst at 350° to 400°C. and space velocity between 0.2 and 1.0 to investigate the (i) effect of temperature at a constant space velocity for a fixed duration, (ii) effect of space velocity at a constant temperature for a fixed duration as well as a fixed quantity of feed, and (iii) the change in the activity of the catalyst with respect to the duration of cracking at constant temperature and space velocity.

The conversion of the feed oil increases with temperature from 47.18 per cent at 350°C. to 88.99 per cent at 550°C. By increasing the space velocity and keeping the process period constant (90 min.) at 400°C., conversion decreases. When the period is changed by keeping the amount of feed constant, the conversion at 400°C. decreases steadily beyond space velocity of 0.5 but steadies to a value of about 65 per cent below this, indicating that conversion in lower regions is not influenced by changes of space velocity. At the optimum condition of reaction, reached at 400°C., and a space velocity of 0.5, the yields of products (by wt.) are as follows: gasoline boiling up to 150°C., 10.61; middle distillate (150°-350°C.), 42.92; and residue (above 350°C.), 34.93 per cent.

The yield of ethylene in the cracked gas is always less than propylene and butylene. The saturated paraffinic gas (more than 50 per cent) indicates the predominance of propane and butane to methane and ethane; it is as high as 69.77 per cent at 0.2143 space velocity and 400°C. The middle distillate obtained under optimum conditions is akin to I.D. diesel fuel and No. 2 fuel oil of A.S.T.M. specification. The residue is highly paraffinic and the naphthenes undergo preferential cracking leading to a little increase in aromatics. It can be used as a feed material for recycle at above 400°C. and as a good stock for hydroforming.

CGCRI, CALCUTTA

Glasses in the System Al_2O_3-B_2O_3-P_2O_5—Direct current (d.c.) conductivity at different temperatures, power factor, dielectric loss and thermal expansion of four samples of glasses in the system Al_2O_3-B_2O_3-P_2O_5 were measured. The properties have been found to improve considerably with comparatively small increase in Al_2O_3 content.

Activiation energy has been calculated from d.c. conductivity measurements and it appears that the mechanism of electrical conduction in some of the glasses in the system Al_2O_3-B_2O_3-P_2O_5 is different from that in silicate or CaO-B_2O_3-Al_2O_3 glasses.

CFTRI, MYSORE

Protein Malnutrition—Subjects suffering from Kwashiorkor have been treated with two blends of protein isolates from groundnut and soyabeen, casein and skim milk powder. Protein blend I consisted of groundnut protein (26 parts), soya been protein (33 parts) and casein (41 parts) fortified with *l*-lysine (0.75 g.) and dl-methionine (1.96 g.). Protein blend II consisted of groundnut protein (52 parts) and skim milk powder (48 parts). The subjects were fed 30 g. of protein daily from one of the above blends sweetened with cane sugar and glucose. The blends have been found to be readily digested by children and diarrhoea stopped in about 3-7 days. Oedema disappeared in about 10-15 days. A marked increase in the serum albumin content of the treated subjects was observed.

RRL, HYDERABAD

X-ray Study of Carbonized Coal—Effect of carbonization and activation on the mineral matter of coal has been investigated by X-ray diffraction method. Samples of Kothagudem coal selected for studies contained following minerals: α-quartz, kaolinite, iron pyrites, siderite, magnetite and anatase.

In coke, produced by carbonization of coal, pyrites changed to ferrous sulphide, siderite to γ-ferric oxide, and anatase to titanium monoxide; α-quartz and magnetite remain unchanged. Coke activated with steam was found to contain α-ferric oxide, α-quartz and some silicates formed from quartz—(MISS) SAFI MEHDI & D.S. DATAR.

Research Papers

The colorimetric estimation of orthophosphate in the presence of condensed phosphates—K.K. Tewari & P.S. Krishnan, Lucknow University, Lucknow. *Analyt. chim. acta*, **22** (1960), 111-117.

Enzymatic studies in the spores of *Aspergillus niger*—Part I: Catalase—G.M. Bhatnagar & P.S. Krishnan, Lucknow University, Lucknow. *Arch. Mikrobiol.*, **36** (1960), 131.

Enzymatic studies in the spores of *As pergillus niger*—Part II: Phosphatase—G.M. Bhatnagar & P.S. Krishnan, Lucknow University, Lucknow. *Arch. Mikrobiol.*, **36** (1960), 169.

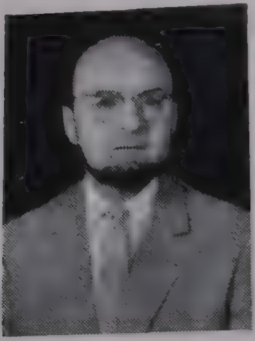
Possibilities of preparing low-ash coals for special uses—G.G. Sarkar, A.K. Chakrabarti & D. Basu, CFRI, Jealgora. *J. Mines, Metals & Fuels*, **8** (7) (1960), 79-87.

Studies in low pressure cyclone coal washer—A.K. Chakrabarti, D. Basu, G.G. Sarkar & A. Lahiri, CFRI, Jealgora. *J. Mines, Metals & Fuels*, **8** (7) (1960), 88-96.

French Experts for Petroleum Institute

Two of the experts from the French Institute of Petroleum(F.I.P.) who are to cooperate on the training of staff of the Indian Institute of Petroleum have arrived in India. They are Mr. Y. L. Gladel & Mr. F. G. Kermarrec.

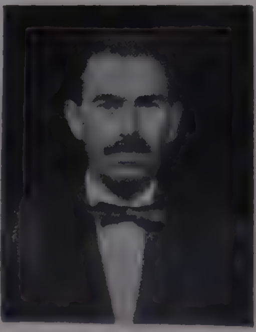
Mr. Y. L. Gladel



Mr. Gladel studied at the Ecole Polytechnique, Paris and qualified as Engineer in 1948. Afterwards he specialized up to 1950 as research engineer in petroleum at the Ecole Nationale Superieure du Petrole et des Moteurs (ENSPM). During this period he was also in U.S A. and was awarded Masters degree in chemical engineering of the Massachusetts Institute of Technology in 1951.

Later at the F.I.P. he became Head of the Refining Laboratory, then Head of the Refining Department and finally Head of the Applied Physical Chemistry Department. He has to his credit 3 patents and 32 publications. His main publications relate to the evaluation of crude oils, liquid-liquid extraction and ion exchange. He has had considerable experience as a lecturer in petroleum at the ENSPM and also in chemical engineering at the University of Louvain, Belgium.

Mr. F. G. Kermarrec



Mr. Kermarrec studied first at the Ecole Centrale de Paris, obtaining his degree of engineering in 1947. He then went to ENSPM and specialized in the "automotive" section. He joined the F.I.P. in 1948 as Research Engineer and proceeded to U.S.A. for study in different laboratories in the application and uses of petroleum products. In 1956 he was awarded the Charles Bihoreau Prize of the French Petroleum Technologists' Association for studies on electronic devices employed in testing automobile performance. He is Head of the Department of Engine Testing at the F.I.P. He has to his credit 4 patents and 16 publications. His publications deal mainly with diesel engines and the evaluation of gasoline quality in road tests.

Grants to Retiring Research Scientists

1. Dr. Y. Bharadwaja (Balwant Rajput College, Agra)—*Study of Indian algae.*
2. Dr. P.V. Gharapure (Grant Medical College, Bombay)—*Isolation and identification of intestinal viruses.*
3. Dr. B. S. Guha—Anthropology.
4. Dr. H.S. Pruthi (National Institute of Sciences of India, New Delhi)—*Systematics of Jassidae.*
5. Prof. B.P. Sarkar (Calcutta University, Calcutta)—*Investigations on the varying valancies of rhenium.*
6. Dr. Viswa Nath (Panjab University, Chandigarh)—*Cytological researches in cells.*
7. Dr. B.C. Basu (School of Tropical Medicine, Calcutta)—*Quantitative estimation of DDT resistant mosquitoes in local area.*
8. Dr. B.S. Madhava Rao (Indian Institute of Science, Bangalore)—*Problem of quantization of general relativity.*
9. Dr. K. Majumdar (Allahabad University, Allahabad)—*Electronic spectra of molecules.*
10. Dr. I.K. Taimini (Allahabad University, Allahabad)—*Some problems of inorganic analysis.*
11. Shri S.K. Malurkar (Indina Institute of Science, Bangalore)—*Geomagnetic variations in relation with variations in other geophysical events.*
12. Shri M. Sanyasi Raju—*Inter relationship between weed phosphorus assimilation and nitrogen fixation by leguminous green manure crops and release of phosphorus and nitrogen during decomposition.*
13. Prof. M. O. P. Iyengar (Madras University, Madras)—*Algal research.*

Dr. S. C. Jain

Dr. S. C. Jain has been appointed, on merit promotion, Asst. Director, NPL, New Delhi, with effect from Sept. 12, 1960. He is Head of the Solid State Physics Division, newly formed.

Dr. Jain (*b*. Dec. 5, 1926) after obtaining his M.Sc. degree from Allahabad University in 1949, joined the NPL to conduct fundamental research under the guidance of Prof. K. S. Krishnan. Based on the researches, he published more than 17 papers on Thermionics and Heated Filaments, in foreign journals, mostly in the proceedings of Royal Society, London and in 1955, he got his Ph.D. degree from the Delhi University. The same year he proceeded to U. K. for conducting research on ionic crystals at the University of Leeds under a 3 years' I.C.I. Fellowship.

Dr. Jain participated (1957) in the International Summer School on Solid State Physics at Verena, Italy and was invited (1958) as Visiting Member of the Staff of the University of Illinois, Urbana, U.S.A. for about eight weeks.

PATENT APPLICATIONS FIELD

66298 : *A new process for the manufacture of latex cement for leather*—G.S. Rama Iyer & Y. Nayudamma, CLRI, Madras.

73702 : *A process for the preparation of cyclopentadecanolide* (*Exaltolide*)—V.V. Dhekne, B.B. Ghatge & S.C. Bhattacharyya, NCL, Poona.

73730 : *A process for the preparation of urease from redgram* (cajanus cajan)—Rajendralal Nath & T.K. Pradwan, School of Tropical Medicine, Calcutta.

PROCESSES LEASED OUT

The following processess have been leased out for commercial development.

1. Water dispersible DDT as oil bound paste, NCL, Poona (Indian Pat. No. 56726)—*Kirti Chemical Works*, Bombay.
2. Extraction and utilization of sisal wax, NCL, Poona (Indian Pat. Nos. 64958 & 65440)—*Ayurvedashram Pharmacy Ltd*, Ahmednagar.
3. Improved design for centrifugal pump, Indian Institute of Science, Bangalore (Indian Pat. No. 64168)—*United Machine Co. Ltd*, Calcutta and *Indian Malleable Castings Ltd*, Calcutta.

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CSIR NEWS

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MYSORE

LOW TEMPERATURE CARBONIZATION PLANT COMMISSIONED

The commercial scale low-temperature carbonization experimental plant installed at the Central Fuel Research Institute, Jealgora, has been heated up on Oct. 18, 1960. The plant has been set up for studies on the carbonization of non-coking coals and briquetted coal fines. It consists of two continuous type narrow firebrick vertical retorts having a throughput of 10 tons of coal per retort per day. A separate heating system provided in the plant enables the operation of one retort when the other is shut.

A special feature of the plant is the arrangement provided for gas circulation in one of the retorts. By passing a suitable carrier gas through the base of retorts, the throughput can be increased considerably.

CFRI, JEALGORA—Low temperature carbonization plant

MEETINGS

A meeting of the Advisory Committee of the *Central Scientific Instruments Organization* will be held in the Conference Room of the CSIR Secretariat, New Delhi, on Dec. 3, 1960 at 11.30 a.m. Dr. B.D. Kalelkar, Senior Industrial Advisor, Ministry of Commerce & Industry, will preside.

A meeting of the Executive Council of the *Central Fuel Research Institute*, Jealgora will be held in the Conference Room of the Institute on Dec. 7, 1960 at 10.00 a.m. Shri S.S. Khera, Secretary, Ministry of Steel, Mines & Fuels, will preside.

Seminar on Electrochemistry

The second Seminar on Electrochemistry will be held at the Central Electrochemical Research Institute, Karaikudi, during Dec. 17-20, 1960. The first Seminar was organized by the Institute in April 1960 (*CSIR News*, Vol. 10, No. 7, p. 1).

More than seventy research papers pertaining to the fundamental and applied aspects of electrochemistry received from scientists and technologists in India and abroad (U.S.S.R., Poland, France & Japan) will be presented and discussed. A few eminent scientists from abroad are also expected to participate in the seminar.

Prof. M. S. Thacker

Prof. M. S. Thacker, Director-General, Scientific & Industrial Research and Secretary, Ministry of Scientific Research and Cultural Affairs led a 5-member delegation of Indian scientists to the Fourth Conference of the Pan-Indian Ocean Science Association held at Karachi (Nov. 16-24, 1960). The other members of the delegation were : Dr. K.S. Krishnan, Director, NPL, New Delhi ; Dr. K. Chandershekharan, Tata Institute of Fundamental Research, Bombay ; Dr. T.S. Sadasivan, Madras University, Madras and Dr. L. N. Johri, Delhi University, Delhi.

Prof. Thacker returned to New Delhi on Nov. 22, 1960.

PERSONAL

- DR. M. GOSWAMI has been appointed, on promotion, Senior Scientific Officer : Grade I, NCL, Poona, with effect from October 17, 1960.

- DR. G. NARSIMHAN has been appointed, on promotion, Senior Scientific Officer : Grade I, NCL, Poona, with effect from October 18, 1960.

- DRS. N.L. DUTTA & P.M. NAIR have been appointed, on promotion, Senior Scientific Officers : Grade II, NCL, Poona, with effect from October 17, 1960.

- DRS. C. G. JOSHI, M. K. UNNY, B. B. GHATAGE, K. S. IRANI & SHRI R. M. JOSHI have been appointed, on promotion, Junior Scientific Officers, NCL, Poona, with effect from October 17, 1960.

- DR. M.S. VENKATACHALAPATHY has been appointed, on promotion, Junior Scientific Officer, CECRI, Karaikudi, with effect from November 3, 1960.

(*Contd. on p. 4, col. 1*)

BRIEFS

Symposium on Physics of Cloud and Rain in the Tropics

A four-day symposium on 'Physics of Cloud and Rain in the Tropics' ended at the Meteorological Office, Poona on November 1, 1960.

The symposium was organized under the joint auspices of the Council of Scientific & Industrial Research, India Meteorological Department, Indian Air Force (Meteorological Branch) and Indian Meteorological Society. Prof. M. S. Thacker, Director-General, Scientific & Industrial Research inaugurated the symposium. Dr. K. R. Ramanathan, Director, Physical Research Laboratory, Ahmedabad and Chairman, Advisory Committee for Rain & Cloud Physics Research of the CSIR and Shri P. R. Krishna Rao, Director-General of Observatories, India Meteorological Department took keen interest in the proceedings of the symposium.

Forty-three papers received from scientists representing ten scientific departments, research institutions and universities in India were presented and discussed in following six sections: (1) Atmospheric nuclei, cloud and rain-drop size spectrum and atmospheric chemistry; (2) Cloud forms and development; (3) Dynamics of cumuliform clouds, thunderstorms and hailstorms; (4) Radar studies of cloud and rain; (5) Atmospheric electricity in relation to precipitation-radioactive fallout; and (6) Cloud modification studies. The Rain & Cloud Physics Research Unit of the CSIR contributed a total number of 12 papers.

Besides, review talks on following subjects were given: Atmospheric nuclei and their role in precipitation processes by Shri A. K. Roy of Rain and Cloud Physics Research Unit; Radioactive fallout studies in India by Dr. K. G. Vohra of Atomic Energy Commission; and Map discussion relating to certain typical interesting situations of cloud and rain, led by Shri C. Ramaswamy of India Meteorological Department.

A Shell of Double Curvature for Roofs and Floors

Laboratory and field studies undertaken at the Central Building Research Institute have established the economy and durability of doubly-curved shell units for constructing roofs, particularly in a large scale housing project. Results of studies have been published by the Institute in the form of a booklet entitled 'A Shell of Double Curvature for Roofs and Floors' (Authors: Prof. G. S. Ramaswamy and Sarvashri S.M.K. Chetty, Zacharia George and R. N. Bhargava).

The 28-page booklet describes the advantages of using doubly-curved shell units, specifications and size of unit, methods of their casting and testing and using them for roofing in different ways, economics of production on large scale and saving in construction cost. It includes line and working drawings of shell unit and integrated shell panel, arrangement of shells on sloping roofs, plan and roofing scheme for residential buildings and a three-roomed quarter, and layout of a casting yard.

Copies of the publication are available from the Asst. Director (Information), Central Building Research Institute, Roorkee.

Pile Foundation

This 10-page booklet published by the Central Building Research Institute, Roorkee gives details (design of piles and beams, method of boring holes, precautions to be taken in concreting, etc.) for construction of under-reamed pile foundations for building houses on black-cotton soil.

Plan and design calculations for a typical house on under-reamed piles, schedules of piles and beams of various sizes included in the booklet are useful for foundation engineers.

Copies of the publication are available from the Asst. Director (Information), Central Building Research Institute, Roorkee.

Kanch Aur Seramik

This 28-page popular illustrated brochure in Hindi, 'Kanch Aur Seramik' (Glass & Ceramics) highlights the role played by the Central Glass & Ceramic Research Institute, Calcutta in solving the problems of the glass and ceramic industry and its further development in the country. It also records the salient achievements of the Institute.

Copies of the publication are available from the Under Secretary, Publications Directorate, CSIR, New Delhi.

RRL, Hyderabad

The Eleventh Foundation Day of the Regional Research Laboratory, Hyderabad, was celebrated during Nov. 5 & 6, 1960.

On Nov. 5, a meeting of the prominent industrialists from Andhra Pradesh, representatives from the Andhra Pradesh Industries Department and Small-scale Industries Service Institute with the Director and senior members of research staff of the Laboratory was held to discuss problems of industries in Andhra Pradesh and utilization of the facilities and talents of the Laboratory for promoting industrialization. Shri R.S. Krishnaswamy, Secretary, Department of Commerce & Industries, Govt. of Andhra Pradesh, presided over the meeting.

About 1,300 visitors from industries, government departments, universities & colleges and public members were shown round the research and pilot plant sections of the Laboratory during these two days which were declared as 'Open Days'.

Research Fellowships

The following have been awarded *CSIR Fellowships* for research on projects noted against their names:

Senior Fellowships:

1. SHRI SARAN SHANKER SAXENA—*Synthesis of 3:4 disubstituted piperidines*, etc. (Banaras Hindu University, Varanasi).

2. SHRI SURESH CHANDRA SRIVASTAVA—*Inorganic complexes* (University of Allahabad, Allahabad).

Junior Fellowships:

1. SHRI ANANDA MOHAN CHAKRAVARTY—*Vitamin B_{12} in relation to the metabolism of micro-organisms* (University College of Science and Technology, Calcutta).

2. SHRI P. MADHAVAN PILLAI—*Investigations on aromatic resources of Kerala* (University of Kerala, Trivandrum).

3. SHRI GEORGE A. DIAS—*Role of enzymes in toxic action of venoms* (Indian Cancer Research Institute, Bombay).

4. SHRI P. S. BADAI—*Thermodynamic properties of mixtures* (Punjab University, Chandigarh).

RESEARCH IN PROGRESS

National Laboratories

CFRI, JEALGORA

X-ray Study of Fusains—Infromation on X-ray study of fusains is meagre. Hence, fusains from coal samples from Samla, Ramnagar, Moitra Chanch, S. Jhagrakhand and Rajhara from Raniganj, Sohagpur and Palmau coalfields have been studied under $K\alpha$-radiation.

Examination of the X-ray photographs reveal that the skeletal structural unit of fusain is similar to that of vitrain—two dimensional graphite sheets—but differs in respect of packing and their degree of orders. The minerals filled up in the cavities of the fusain are fibrous. Besides kaolinite which is a common component in all the samples, montimorillonite, quartz and siderite are also present—B.K. BANERJEE, D.P. DUTTA & R.S. DUBEY.

CFTRI, MYSORE

Storage of Ripe Arecanuts—Ripe arecanuts during storage by conventional methods (pit storage, water storage, etc.) undergo heavy microbial damage.

An improved process of storage has been developed by which arecanuts in husk retain their original colour of skin, fruit firmness, colour, structure, flavour and taste of edible kernel. The process consists in blanching and steeping arecanuts in low concentrations of mixed preservatives in sealed containers. Preliminary experiments have shown that nuts in husk, stored for 2-3 months, if hygienically packed in polythene bags have a shelf life of over a month for purposes of transport and retailing. The edible kernel after six months of storage contains preservatives well below the permissible limits.

As an extension work, conditions have been established for convenient and safe storage of ripe arecanuts in husk in earthenware pots. Consumer evaluation of the 6-month stored product is satisfactory.

CDRI, LUCKNOW

Stability of Vitamins—Effect of ferrous sulphate, ferric ammonium alum, ferric glycerophosphate and ferric ammonium citrate on the stability of ascorbic acid during three months of storage at 37°C. have been studied. Ferrous sulphate, in general, is found to have no deleterious effect, while ferric ions, both in organic and inorganic form, rapidly accelerate auto-oxidation of ascorbic acid. Ferrous sulphate has no effect in counteracting the oxidation of the vitamin by copper either in aqueous or sorbitol media. Accelerated temperature test carried out at 100°C. for 4 hr shows that in the presence of iron, ascorbic acid is more stable in sorbitol : glycerol : water (2:2:1) than in syrup : glycerol : water (2:2:1). The influence of the six amino acids, viz. asparagine, cysteine, glycine, glutamic acid, methionine, tryptophan and glutathione on the shelf-life of vitamin A (palmitate), thiamin and ascorbic acid, when present together in four different vehicles, has been studied. In the presence of cysteine more than 80 per cent vitamin B_1 and vitamin C are retained after storing at 37°C. for 8 months in these menstrua. Methionine gives comparable results in only one medium. None of these amino acids had any protective effect on vitamin A.

Sponsored Research

Design of High Head Gates—Studies have been in progress for formulating design criteria for fabrication of gates at high heads in hydraulic works. The operation of gates at high heads when partially open gives rise to manifold problems, e.g. severe vibration, cavitation and downpull forces.

As a result of studies carried out so far, a fairly stable high head emergency gate has been developed with the aid of cylindrical pressure tank, 5 ft in diam. and 25 ft long, fabricated out of 0.25 in. mild steel sheets. The carriage of the gate moves freely on the railings fixed to the pressure tank face. Arrangement for direct measurement of hydraulic downpull forces has been provided in the design.

Investigations were carried out for modification of emergency gates, designed earlier, to reduce the hydraulic downpull forces to the minimum. An emergency gate with 17.5 in. lip length, having a cut of 45° to the bottom edge and with the base of gate depressed and made arc-shaped (radius 3 in.) and employing 18 in. depth of recess reduces the hydraulic downpull from 86.7 tons to 52.6 tons when operated under a head 365 ft high—H.L. UPPAL & T.C. PAUL, Irrigation & Power Research Institute, Amritsar.

Physico-chemical Studies on Indian Silk—Effect of *p*H on the intake of hydrochloric acid and potassium hydroxide by silk fibroin has been studied.

The maximum acid binding capacity of a silk fibre at 25°C. is found to be 0.13 milli-equivalent/g. and the maximum base binding capacity is more than 0.90 milli-equivalent/g. The presence of 0.13-0.17 milli-equivalent/g. of free carboxyl groups in silk fibroin has been estimated from the potentiometric titration curve. The amount of base bound in the strongly alkaline region greatly exceeds the content of free carboxyl groups. In the *p*H range of 8-13, the amount of base bound by unmethylated fibre is 5-10 times larger than that by the methylated fibre. The acid binding capacity of the fibroin, however, is not affected by methylation. It is therefore concluded that the base binding capacity of silk fibroin is determined to a considerable extent by the tyrosine residues in the polypeptide chain—S. BASU, (Miss) RAM BHATTACHARYA & R.S. BANERJEE, University College of Science, Calcutta.

Polyamide Resins from Castor Oil Fatty Acids—A process for simultaneous dehydration and polymerization of castor oil fatty acids has been worked out. The process (Indian Pat. No. 70174) consists in heating castor oil fatty acids in presence of water vapour and a catalyst at high temperatures. Dimeric acids of 90-95 per cent concentrations are obtained within 2-3 hours. The acids can be easily condensed with ethylenediamine and diethylenetriamine to produce various grades of resins similar to those marketed under the trade name 'Versamides'—R.K. Bhatnagar, Shri Ram Institute for Industrial Research, Delhi.

Research Papers

Ion exchange separation of some light rare earths by elution with sodium triphosphate—II: Effect of pH of eluant—P. R. Subbaraman, K.S. Rajan & J. Gupta, NCL, Poona. *Z. anorg. Chem.*, **304** (1960), 191-95.

An X-ray study of air oxidized vitrains and regenerated humic acids—Sultana Z. Ali, CFRI, Jealgora. *Fuel*, **39** (1960), 369-76.

The relationship of the properties of coals with those of their cokes—N. C. Sinha, B. K. Sinha, A. K. Roy Chowdhury, J. M. Sanyal, N. N. Das Gupta & A. Lahiri, CFRI, Jealgora. *Coke & Gas*, **22** (1960), 382-88.

Pilot plant studies on the production of metallurgical coke—N. N. Das Gupta, S. Banerjee, N. N. Chatterjee & M. V. P. Menon, CFRI, Jealgora. Proc. Symp. Pilot Plants in Metallurgical Res. Develop. (*Tech. J. India*) 1960, 213-16.

PERSONAL

(*Contd. from p. 1, col. 3*)

●Shri H. S. Gupta joined as Section Officer: Grade II, NCL, Poona, with effect from October 5, 1960 on transfer from CBRI, Roorkee.

●Shri S. J. Sant Ram Section Officer: Grade II, on transfer from NCL, Poona, assumed charge at CBRI, Roorkee, with effect from October 21, 1960.

* * *

●Shri B. K. Majumdar, Senior Scientific Officer, CFRI, Jealgora, left for Brussels on October 28, 1960 to attend the Round Table Conference on Determination of Aromaticity in Coals (Nov. 3-4, 1960) under the auspices of the European Research Associates. Shri Majumdar will also visit the Dutch State Mines Laboratory Geleen (Holand) and Charbonnages de France and CERCHAR Laboratories at Paris.

●Dr. C.G. Balachandran, Junior Scientific Officer, CBRI, Roorkee, after completion of his studies on *Architectural Acoustics* at Canada under a 2-year Post-Doctorate Fellowship, returned to India and resumed duties with effect from November 1, 1960. Dr. Balachandran visited various acoustical establishments in Canada, U.S.A. and U.K.

●Shri A. K. Ganguly, Senior Scientific Assistant, CFRI, Jealgora, who had been to Prague for process study in the *Operation of Manufacture of Synthetic Fuels* under a Czechoslovakian Government Scholarship returned to India and resumed duties with effect from October 13, 1960.

* * *

●Dr. B.R. Nijhawan, Director, NML, Jamshedpur, has been nominated an honorary member of the Editorial Advisory Board of the Commonwealth Library of Science, Technology and Engineering, Oxford and a member of the Council of Mining, Geological and Metallurgical Institute of India for 1960-61.

●Dr. K. N. Mathur, Director, CSIO, New Delhi, has been nominated a member of the Panel of Experts to advise the Inventions Promotion Board, Ministry of Commerce & Industry.

●Shri Dinesh Mohan, Deputy Director, CBRI, Roorkee, has been elected a member of the Executive Committee of the Indian National Society of Soil Mechanics & Foundation Engineering for a period of 2 years.

●Dr. H.A.B. Parpia, Liaision & Extension Officer, CSIR, New Delhi, has been nominated an alternate member to Director-General, Scientific & Industrial Research, on the National Productivity Council *vice* Dr. J.L. Sarin, retired.

●Shri J.C. Banerjee, Asst. Director, CGCRI, Calcutta, has been nominated a CSIR representative on the reconstituted Panel of Refractories of the Ministry of Commerce & Industry.

●Shri S. Ramachandran, Senior Scientific Officer, CECRI, Karaikudi, has been nominated an Advisory Member of the Committee in Electroplaters' Trade, Department of Commerce & Industries, Madras.

PATENTS & PROCESSES

Application Filed

73065: *Improvements in or relating to the use of cashewnut shell liquid in surface coatings*—M.S. Sivasamban, B G. Murthy, J S. Aggarwal & S.H. Zaheer, RRL, Hyderabad and P.G. Sharma, NCL, Poona.

Applications Accepted

India

65778: *Improvements in or relating to the production of trans-diethylstilbestrol dimethyl ether and allied stilbenes*—C.G. Joshi, J.L. Bose & R.C. Shah, NCL, Poona.

66079: *Improvement in or modification of a tension screw jack with particular reference to a pressure measuring device for recording the tension*—G.S. Ramaswamy, S.K. Narayana & D.S. Bhatnagar, CBRI, Roorkee.

66095: *A new method for production of diesel oil from coal tar and coal tar fractions*—N.G. Basak, S.K. Bose, A. Ganguly & A. Lahiri, CFRI, Jealgora.

66298: *A new process for the manufacture of latex cement for leather*—G.S. Rama Iyer & Y. Nayudamma, CLRI, Madras.

66953: *Process for preparation of ethylene oxide*—H. Ibrahim, V.V. Deshpande & N.R. Kuloor, Shri Ram Institute for Industrial Research, Delhi.

66966: *An improved process for the manufacture of porous rigid filters*—S.L. Kapur & R.N. Pandya, NCL, Poona.

67779: *A process for briquetting of non-caking coal slacks and carbonziation of briquettes to produce a strong coke*—S H. Zaheer, D.P. Agarwal, D.K. Rao & M.G. Krishna, RRL, Hyderabad.

U.K.

14797/59: *Improvements in or relating to the refining and the utilization of cotton seed products*—T.R. Seshadri & K. Chander, University of Delhi, Delhi.

Applications Sealed

65239: *Improvements in or relating to hot-dip aluminizing of steel*—S.M. Arora, P.K. Gupte & B.R. Nijhawan, NML, Jamshedpur.

65777: *A new process for the production of 4-hydroxycarbostyrils*—V.R. Shah, J.L. Bose & R.C. Shah, NCL, Poona.

66228: *Improvements in or relating to wheel mounting mechanism*—C R. Gupta, NPL, New Delhi & S.R. Mehra, CRRI, Delhi.

Process Leased Out

The process for the manufacture of *Prestressing Screw Jack* (Indian Pat. No. 68865) worked out by the Central Building Research Institute, Roorkee, has been leased out for commercial exploitation to *Kem Engineering Works*, Calcutta.

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CSIR NEWS

VOL. 10 NEW DELHI—DEC. 12, 1960 : AGRAHAYANA 21, 1882 No. 23

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MYSORE

Symposium on Load Bearing Capacity of Soils

A symposium on 'Load Bearing Capacity of Soils' jointly organised by the Central Building Research Institute, Roorkee and the National Buildings Organization, New Delhi will be held at the Vigyan Bhavan, New Delhi during Jan. 23-24, 1961. Shri K.C. Reddy, Minister for Works, Housing & Supply will inaugurate the symposium.

A delegation of experts from Russia is expected to participate in the symposium.

Thirty-two papers received from soil engineers from India and abroad covering the following aspects will be presented and discussed at the symposium.

1. Field load bearing capacity tests and their interpretations.
2. Laboratory bearing capacity tests and their interpretations. Settlements, their estimation and permissible allowances.
3. Pile foundation.
4. Theories on bearing capacity and their application to design.

MEETING

A meeting of the Chairmen of the Research Committees of the CSIR will be held in the Conference Room of the CSIR Secretariat, New Delhi, on Dec. 31, 1960 at 10.00 a.m. Prof. M.S. Thacker, Director-General, Scientific & Industrial Research, will preside.

PERSONAL

● **Shri R.D. Taneja** has been appointed, on promotion, Senior Scientific Officer : Grade I, Publications Directorate, CSIR, New Delhi, with effect from Dec. 3, 1960.

● **Drs. S.K. Mukherjee** and **J.D. Kohli** have been appointed, on promotion, Senior Scientific Officers : Grade I, CDRI, Lucknow, with effect from Feb. 26, 1960.

● **Shri B. Raj Joneja**, Publications Directorate, New Delhi, has been appointed, on promotion, Junior Scientific Officer (Publicity), NBG, Lucknow, with effect from Oct. 10, 1960.

● **Shri K.P.K. Menon**, Stores Verification Officer, CSIR, New Delhi, relinquished charge of his post from Nov. 25, 1960.

* * *

● **Prof. B.C. Guha**, Head of the Department of Applied Chemistry and Chairman, Chemical Research Committee of the CSIR attended an International Conference on vitamin C in U.S.A. at the invitation of the New York Academy of Sciences. He also delivered lectures at biochemical centres in the Universities of Pennsylvania, Michigan, Wisconsin, Texas and California and at the National Institute of Health, Bethesda. On his way back, he visited the University of Tokyo and returned to India on Nov. 20, 1960.

● **Dr. B.M. Gupta**, Senior Scientific Officer : Grade I, CDRI, Lucknow, after completion of his studies on bacterial viruses at the Rothamsted Experimental Station, Harpenden, Herts (U.K.) under the Colombo Plan, returned to India and resumed duties with effect from Nov. 6, 1960.

● **Shri S. Bhattacharji**, Junior Scientific Officer, CDRI, Lucknow, who had been to U.K. for studies on biosynthesis of ergot alkaloids at the University of Manchester under the Colombo Plan, returned and resumed duties with effect from Oct. 8, 1960.

● **Shri Balkrishna**, Junior Scientific Officer, CDRI, Lucknow, attended the 3-weeks' course on *Radiation Protection* organised by the W.H.O. at the Atomic Energy Department, Bombay.

* * *

● **Dr. B.R. Nijhawan**, Director, NML, Jamshedpur, has been renominated Chairman of the Methods of Physical Tests Sectional Committee and member of the Alloy Steels and Special Steels Sectional Committee of the Indian Standards Institution.

(*Contd. on p. 4, col. 1*)

Prof. H. Wright Baker

Prof. H. Wright Baker, D.Sc., M.I. Mech.E., M.I.P.E., lately Professor of Mechanical Engineering in the Faculty of Technology, Manchester University, has been working at the Central Mechanical Engineering Research Institute, Durgapur since Nov. 6, 1960 as a Chief Consultant under the United Nations Technical Assistance Board Aid. He is likely to stay at the Institute for about four months.

Prof. Baker (*b.*, 1893) after his early education at the Liverpool College, graduated in mechanical engineering from the Manchester University (1915). During 1915-19, he worked in relief and reconstruction work in France. He joined the Manchester University as Assistant Lecturer in 1919 and was later appointed Senior Lecturer in the Faculty of Science. During his 20 years' stay at the College he also carried out researches mainly on internal combustion engines. For the last 21 years (1939-1960) he was Professor of Mechanical Engineering in the College of Technology, Manchester University. During his tenure at the College he was responsible for raising teams of research workers in mechanical, production and design engineering and conducted refresher courses at the College on recent developments in these fields. He visited engineering institutions in U.S.A. and lectured at the Egyptian Universities as Visiting Professor.

Prof. Baker has to his credit a large number of research papers and is author of books on heat technology and modern workshop technology. He is internationally known for his opening the Bronze Scroll from the Dead Sea in 1956.

Prof. Baker is well known amongst the engineering schools in Europe as an early member of the

(*Contd. on p. 2, col. 3*)

BRIEFS

Conference on Building Materials

The proceedings of the conference of research workers on building materials held at the Central Building Research Institute, Roorkee, during April 11-13, 1960 have been published in the form of a report entitled 'Research Workers' Conference on Building Materials'. The 92-page memiographed report includes the abstracts of 31 research papers presented and discussed at the conference under the following technical sessions: Heavy Clay Products, Cementitious Materials, Concrete, Heat and Sound Insulation, Building Paints and Painting, Organic Building Materials, and Dissemination of Results of Research. It includes the review of research papers presented by discussion leaders for each technical session together with summaries of discussion.

The report is useful for research workers in obtaining a first-hand information in regard to the present trend of research and requirement of building materials in the country.

Copies of the publication are available from the Assistant Director (Information), Central Building Research Institute, Roorkee.

Symposium on Plant Embryology

A four-day symposium on Plant Embryology, sponsored and organized by the Biological Research Committee of the CSIR, ended at the Department of Botany, University of Delhi on Nov. 14, 1960.

Prof. N. K. Sidhanta, Vice-Chancellor, University of Delhi welcomed the delegates. In his inaugural address, Prof. M. S. Thacker, Director-General, Scientific & Industrial Research, appreciated the role of universities in conducting fundamental researches and hoped that the setting up of a National Biological Laboratory under the CSIR during the Third Five-Year Plan would give a further impetus to biological research in the country. Prof. P. Maheshwari, Chairman of the symposium gave an opening address on 'Past, present and future of plant embryology'.

Thirty-seven research papers received from embryologists of various institutions in the country were presented and discussed. The papers covered the following aspects : (i) Developmental studies, (ii) special aspects of reproduction (apomixis, polyembryony), (iii) embryology in relation to taxonomy, and (iv) experimental embryology. On the concluding day a seminar on 'Teaching and Research in Plant Embryology' was arranged.

Research Fellowships

The following have been awarded *CSIR Fellowships* (*Junior*) for research in schemes noted against their names :

1. Shri Arunbaran Banerjee—*Large scale production of mycobacillin, etc.* (University College of Science & Technology, Calcutta).

2. Shri Ajoy Kumar Ganguly—*Mechanism of vulcanisation of rubber* (Indian Association for the Cultivation of Science, Calcutta).

3. Shri Ratan Lal Malothra—*Unit on thermodymanic properties of mixtures* (University of Panjab, Chandigarh).

* * *

The Director-General, Scientific & Industrial Research, has accepted the resignation of the following CSIR research fellows :

Senior Fellowships :

1. Shri Hari Pall Singh — *Palaeobotanical investigations of Indian coals*, Birbal Sahani Institute of Palaeobotany (Oct. 24, 1960).

2. Shri B.N. Samaddar—*Studies on the hydraulic properties of granulated blast furnace slage in relation to composition*, University College of Science and Technology, Calcutta (Oct. 21, 1960).

3. Shri Asok Nath Lahiri—*Biosynthesis and metabolism of gibberellic acid*, Bose Institute, Calcutta.

4. Shri K. K. Kundu—*Non acqueous acid-base titration*, Jadavpur University, Calcutta (Nov. 1, 1960).

Junior Fellowships :

1. Shri Inder Raj—*Studies in terpenes and terpenoids*, Panjab University, Chandigarh (Oct. 29, 1960).

2. Shri C.L. Rastogi—*Chemical study of the chromogenic factors of cottonseed and pongam oils*, Delhi University, Delhi (Nov. 21, 1960).

(*Contd. from p. 1, col. 3*)

C.I.R.P. (International College for Research in Production Engineering) and has been closely associated with the Manchester Association of Engineers and the Institution of Automobile Engineers (Past President) and the N.W. Branch of the Institution of Mechanical Engineers (Past Chairman) and the National Physical Laboratory, Teddingdon (member, General and Executive Committees).

Shri S. Bagchi

Shri S. Bagchi has been appointed, on promotion, Deputy Director, CMRS, Dhanbad, with effect from Oct. 20, 1960.

Shri Bagchi (*b.*, 1923 at Naogaon, East Pakistan) after graduation from the Presidency College, Calcutta obtained the Diploma (in first class) in Mining Engineering from the Indian School of Mines & Applied Geology, Dhanbad (1948). The same year, he obtained Mine Surveyors' Certificate and First Class Mine Managers' Certificate. In 1952, he went to U.K. under a Colombo Plan Scholarship and received a special course of instructions in the Post-Graduate School of Mines, University of Sheffield. He also visited Holland, Germany, Switzerland and France on an educational tour.

Shri Bagchi's special field of study is mining engineering and he has published 20 research papers dealing with mines and metals. He is a member of the Mining, Geological & Metallurgical Institute of India.

* * *

Consequent on Prof. K. Banerjee appointed Director, Indian Association for the Cultivation of Science, Jadavpur, the research schemes on (i) Study of diffused X-ray reflections and determination of elastic constants of crystals and (ii) study of low angle X-ray scattering from natural and synthetic fibrous materials, have been transfered from the Allahabad University to the Indian Association for the Cultivation of Science.

RESEARCH IN PROGRESS

National Laboratories

CFTRI, MYSORE

Studies on Garlic—A palatable and acceptable product which is useful as a therapeutic agent has been prepared from garlic. It is a concentrate of the precursor of the active principle from garlic. The enzyme, allinase, required for converting the precursor to the antibacterial substance, allicin, has been prepared in the form of dry powder. The concentrate and the enzyme have been found useful in the treatment of ancillary dysentery, diarrhoea and rheumetoid arthritis. An ointment prepared from the concentrate is effective in the treatment of skin infections.

CGCRI, CALCUTTA

Mica in House Paints—Effect of addition of mica powder in exterior house paints has been investigated. Mica considerably improves the effective life of exterior house paints by increasing their corrosion resistance and durability. It has no detrimental effect on other useful properties like drying time, consistency or colour of the paints. The addition of mica is most beneficial in the finish coat, less in the undercoat and least in the primary coat. The maximum effect of mica addition is obtained by incorporating it in all the three coats.

Dielectric Properties of Indian Mica—Studies have been in progress on the effect of heat treatment on the dielectric properties of ruby muscovite mica from Bihar and green muscovite mica from Madras (*CSIR NEWS*, Vol. 10, No. 15, p. 3).

Ruby mica up to 175°C. does not show any change in power factor, permittivity and loss factor and therefore this variety of mica can be used in precision electrical equipment where service requirements do not exceed this temperature.

The structure of green mica is such that it is more stable but less perfect than that of ruby mica. Tentative structural formula for ruby and green mica have been derived.

RRL, HYDERABAD

Intracellular Micro-organisms in Homopterous Insects—Micro-organisms present in the two trilobed tumour like growth found to occur in the two sides of the abdomen of *Oxyrhaches tarandus* have been studied. The micro-organisms present in tumour are small rod-like in shape and are found in clumps or scattered in cell. Granule-like bodies are present mostly in adult insects. The micro-organisms are found invariably in all the tumours and these are transferred from one generation to another.

Sponsored Research

Bacterial Sulphide from Spent Distillery Liquor—Production of hydrogen sulphide by bacterial fermentation of spent distillery liquor has been investigated. *Desulphovibrio desulphuricans* in a raw spent distillery liqour medium supplemented with calcium sulphate up to 2 per cent level produce in 30 days 1.75 g. of hydrogen sulphide and 12.7 g. of volatile acids per litre of fermenting liquor. Higher yield of sulphides and lower concentration of volatile acid in the fermented medium have been observed with *D. rubenshikki* enriched from raw sewage sludge. The sulphide fermentation reduces the C.O.D. value of the spent distillery liquor by 78.3 per cent—T.K. GHOSE & S.K. BASU, Jadavpur University, Calcutta.

Effect of Antibiotics on Carbohydrate Metabolism—Effects of dihydrostreptomycin and achromycin on the blood glucose of rabbits has been investigated. Both the drugs diminished the utilization of glucose. The effect of achromycin, unlike the effects of penicillin and dihydrostreptomycin, persisted for a longer time after the withdrawal of the drug.

The effects of dihydrostreptomycin and achromycin on the lipid content of tissues of rats have also been studied. In the case of dihydrostreptomycin-injected rats only the cholesterol ester content of the kidney decreased significantly and the total cholesterol remained unchanged. Phospholipid content of the intestine as well as the whole body decreased significantly; no significant difference in the total lipid content of the whole body was found. In the case of achromycin-fed rats, both the total and the cholesterol ester content of the whole body and the adrenals increased significantly. There was no change in the phospholipid content of any of the tissues; and the total body fat as well as the liver fat remained unchanged.

Preliminary investigation on the action of antibiotics on human beings revealed no change in glucose tolerance and serum, cholesterol, phospholipid and protein content—S. BANERJEE & P.K. GHOSH, Department of Physiology & Biochemistry, Bikaner Medical College, Bikaner.

Surfactant from Cashewnut Shell Oil—Disodium salts of anacardic acids (four fractions of varying unsaturation separated from cashewnut shell oil by low-temperature fractionation technique) have been examined for their surface active properties, viz., surface tension, conductance, emulsification and foaming. The following conclusions have been reached: (i) Saturated anacardic acid is the most surface active acid at low concentration (0.1 per cent) but in the case of unsaturated acid, surface activity is more at higher concentrations; (ii) interfacial surface-activity is optimum with an optimum hydrophilic-lipophilic balance (HLB) in the surfactant molecule; and saturated product is the most interface-active at lower concentrations; (iii) with increase in the degree of unsaturation of acids the emulsifying characteristic first slightly increases and then slightly falls; foam height also increases with the increase in unsaturation; (iv) the two important rules of colloidal electrolytes, viz. increase of critical micellar concentration with unsaturation in a homologous series and relationship of surface active and bulk properties of the product with optimum HLB have been found valid; and (v) saturated and tri-unsaturated anacardate show the optimum surface active and bulk properties indicating that for the utilization of anacardic acid as surfactant, its separation into fractions of varying unsaturation is not necessary—B.C. Guha & A.K. Biswas, University Colleges of Science and Technology, Calcutta.

PERSONAL

(*Contd. from p. 1, col. 2*)

- Dr. Atma Ram, Director, CGCRI, Calcutta, has been nominated a member of the Advisory Committee of the Harcourt Butler Technological Institute, Kanpur.
- Dr. S. Husain Zaheer, Director, RRL, Hyderabad, has been nominated a member of the Board of Directors of Andhra Pradesh Industrial Development Corporation.
- Dr. N.G. Basak, Asst. Director, CFRI, Jealgora, has been nominated a member of the Chemical Division Council of the Indian Standards Institution.
- The following have been nominated members of the Committee/Panel of the Indian Standards Institution:

Shri G.D. Joglekar, Asst. Director, NPL, New Delhi—*Carbon Brushes Sub-Committee* (Member and Convener).

Dr. A.B. Chatterjee, Asst. Director, NML, Jamshedpur—*Light Metals and Alloys Sectional Committee.*

Shri J.C. Banerjee, Asst. Director (Principal Member) and Dr. D.N. Nandi, Senior Scientific Officer (Alternate Member), CGCRI, Calcutta—*Refractories Sectional Committee.*

Dr. G.S. Sidhu, Asst. Director, RRL, Hyderabad—*Chemical Standards Sectional Committee.*

Dr. E.G. Ramachandran, Asst. Director, NML, Jamshedpur—*Copper and Copper Alloys Sectional Committee.*

Shri P.P. Bhatnagar, Asst. Director, NML, Jamshedpur—*Pig Iron & Ferro Alloys Sectional Committee.*

Shri P.K. Gupte, Asst. Director, NML, Jamshedpur—*Steel Sectional Committee.*

Shri B.N. Dass, Asst. Director, NML, Jamshedpur—*Metals Standards Sectional Committee* and *Welding General Sectional Committee.*

Dr. P.R. Subbaraman, Senior Scientific Officer (Principal Member) and Dr. V. Yatirajan, Junior Scientific Officer, NCL, Poona—*Methods of Chemical Analysis Sectional Committee.*

PATENTS & PROCESSES

Applications Filed

73978 : *An improved rumbler for the extraction of essential oils from tight-skinned citrus fruits*—J.S. Pruthi, M.N.S. Vasudeva Rao, C.M. Parekh & G. Lal, CFTRI, Mysore.

74184 : *A new process for the manufacture of asbestos-cement sheets, tiles and similar materials having improved transverse strength using either chrysotile or amphibole variety of asbestos*—A.K. Chatterji, K.D. Dhariyal & N.K. Patwardhan, CBRI, Roorkee.

Applications Accepted

India

67568 : *A process for the preparation of aqueous solution of water insoluble furocoumarins*—J. Misra & B. Mukerji, CDRI, Lucknow.

U.K.

1704/58 : *A process for the preparation of tridecane-1 : 13-dicarboxylic acid or its ester suitable for the preparation of exaltone (cyclopentadecanone)*—B.B. Ghatgey, U.G. Nayak, K.K. Chakravarti & S.C. Bhattacharyya, NCL, Poona.

Applications Sealed

India

64523 : *A process for the manufacture of water resistant briquettes from lignite and the like*—M.S. Iyengar, T.A. Subramanian & A. Lahiri, CFRI, Jealgora.

65138 : *Improvements in or relating to the manufacture of garlic powder*—J.S. Pruthi, G. Lal, V. Subramanyan, CFTRI, Mysore.

65543 : *A process for the preparation of α ω-dicarboxylic acids and ω-hydroxy acids suitable for conversion to macrocylic compounds*—H. H. Mathur & S. C. Bhattacharyya, NCL, Poona.

65646 : *Improvements in or relating to the production of manganese metal from chloride baths with special reference to the utilization of low grade manganese*—V. Aravamuthan & S. Gopal, CECRI, Karaikudi.

65779 : *A process for the production of hydrogen sulphide from gypsum*—Razia Osmani (Miss), D.S. Datar & S. Husain Zaheer, RRL, Hyderabad.

65977 : *Rubber base adhesive*—Uma Shankar, NCL, Poona.

66109 : *Improvements in or relating to the production of magnesium metal*—V. Aravamuthan & K. Venugopal, CECRI, Karaikudi.

66197 : *A new method for the oxidation of cumene to α-cumylhydroperoxide*—N.G. Basak, J.M. Sagar & A. Lahiri, CFRI, Jealgora.

France

1,208,393 : *New stainless steels and methods of preparing them*—B.R. Nijhawan, P.K. Gupte, S.S. Bhatnagar & B.K. Guha, NML, Jamshedpur.

1,225,514 : *A process for the preparation of dihydrojasmone*—J.H. Amin & S.C. Bhattacharyya, NCL, Poona.

Process Ready for Exploitation

Technical details for the manufacture of *Transistorised Community Receiver*, developed by the National Physical Laboratory (NPL), New Delhi, are available, free of charge to interested parties from the Director, NPL, New Delhi.

Processes Leased out

The following processes have been leased out for commercial development :

1. Water dispercible DDT as oil bound paste, NCL, Poona (Indian Pat. No. 56726)—*Khaitan Sons& Co., Calcutta* and *B.J. Luthuria & Co.*, Bombay.
2. Manufacture of Centrifugal Pumps, Indian Institute of Science, Bangalore (Indian Pat. No. 64168)—*Pump Manufacturing Corporation Private Ltd.*, Bombay.
3. Extraction and utilisation of sisal wax, NCL, Poona (Indian Pat. Nos. 64958 & 65440)—*Everest Industries*, Calcutta; and *Malpani Industries*, Bombay.

* * *

Dr. P.C. Alexander, Development Commissioner, Small Scale Industries, Ministry of Commerce & Industry, has been nominated a member of the Advisory Committee of the *Central Scientific Instruments Organization*, New Delhi, *vice* Shri I.S.E. Iyer.

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CSIR NEWS

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Training Course in Battery Technology

A seven-week training course on Storage Battery Technology will commence on Feb. 1, 1961 at the Central Electrochemical Research Institute, Karaikudi. This is the second in the series of training course in batteries instituted in February 1960.

The course is intended for training of technical personnel employed in industry and organizations engaged in the manufacture and testing of batteries. Persons who wish to undergo training should hold a Bachelor's Degree in Science (with physics and chemistry as subjects of study), Metallurgy or Chemical Engineering.

Prospectus and application forms available from the Director, Central Electrochemical Research Institute, Karaikudi, may be obtained on request (accompanied by an Indian Postal Order for Re. 1). Completed applications should reach the Director by Jan. 10, 1961.

MEETINGS

A meeting of the *Electrical and Mechanical Engineering Research Committee* will be held in the Conference Room of the CSIR Secretariat, New Delhi, on Jan. 10, 1961 at 3.00 p.m. Prof. M.S. Thacker, Director-General, Scientific & Industrial Research, will preside.

A meeting of the *Pharmaceuticals & Drugs Research Committee* will be held in the Rotando Hall, Writers' Building, Calcutta, on Jan. 17, 1961 at 10.30 a.m. Dr. K.A. Hamied, will preside.

A meeting of the *Chemical Research Committee* will be held at the Allahabad University, Allahabad, on Jan. 30 & 31, 1961. Dr. B.C. Guha, will preside.

PERSONAL

- **Dr. C.R. Mitra** has been appointed, on promotion, Senior Scientific Officer : Grade I, NBG, Lucknow, with effect from Oct. 12, 1960.
- **Dr. S. Mukerjee** has been appointed, on promotion, Senior Scientific Officer : Grade I, IIBEM, Calcutta, with effect from Dec. 2, 1960.
- **Dr. U.K. Banik** has been appointed, on promotion, Senior Scientific Officer : Grade II, IIBEM, Calcutta, with effect from Dec. 2, 1960.
- **Dr. H.D. Singh** has been appointed Junior Scientific Officer, IIBEM, Calcutta, with effect from Dec. 3, 1960.
- **Dr. D.P. Chattopadhaya** has been appointed, Junior Scientific Officer, IIBEM, Calcutta, with effect from Dec. 12, 1960.
- **Shri R. Radhakrishnan** has been appointed, on promotion, Electrical Engineer, CECRI, Karaikudi, with effect from Sept. 7, 1960.
- **Shri S.K. Rangarajan** has been appointed, Junior Scientific Officer, CECRI, Karaikudi, with effect from Nov. 23, 1960.
- **Shri K.L. Ramabhadran** has been appointed Stores Officer, CECRI, Karaikudi, with effect from Sept. 22, 1960.

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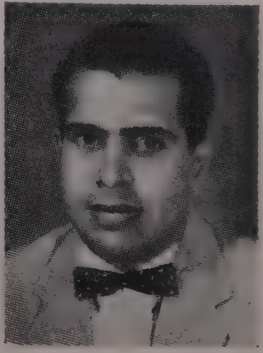
- **Shri R.M. Krishnan**, Asst. Director, NML, Jamshedpur, who had been on deputation to Switzerland, Sweden, U.S.A. and Japan as Member-Secretary of the Foundry Productivity Team, National Productivity Council of India, returned and resumed duty with effect from Nov. 16, 1960.
- **Shri S. Ghosh**, Senior Scientific Officer, CECRI, Karaikudi, proceeded to France for 6-months training in Storage Battery Technology under a French Government Scholarship.

(*Contd. on p.4, col. 1*)

Prof. G.S. Ramaswamy

Prof. G.S. Ramaswamy has been appointed, on merit promotion, Deputy Director, CBRI, Roorkee, with effect from Nov. 28, 1960.



Prof. Ramaswamy (*b.* Oct. 3, 1923) got the B.E. Degree with Honours and C.E. Diploma with Honours from the College of Engineering, Guindy, Madras. As government scholar, he specialized in structural engineering at the California Institute of Technology, U.S.A. (1945-48) and obtained M.S. and C. E. degrees. During 1949-56 he was Professor of Civil Engineering at the Annamalai University. In December 1956 he joined the Central Building Research Institute as Assistant Director and Head of the Division of Concrete and Structures.

A specialist in shell structures and prestressed concrete, Prof. Ramaswamy has contributed a number of papers to International Conferences. His contributions to the theory of funicular shells (developed by him) have been translated into other languages including Russian. As a member of the study team on factory buildings of the National Productivity Council he visited Japan, U.S.A. and Italy during 1959. He has served as a member of the expert panels on residential buildings, factory buildings, and bridges of the Committee on Plan Projects of the Planning Commission and the Site-Selection Committees set up for the Nunmati and Barauni refineries. He has been invited to lecture at the Colloqium on Shell Structures to be held at Delft during 1961.

BRIEFS

MPF Plant at Coimbatore

The experimental Multipurpose Food (MPF) plant of the Central Food Technological Research Institute, Mysore has been transferred and reset at Coimbatore. The plant is located in the premises of M/s. *Chandra Textiles* in Peelamedu area. The new unit jointly sponsored by the Institute and the Government of Madras has a production capacity of 3 tons during a working period of 8 hours.

The unit is meeting the increased demand (about 300,000 lb. per annum) of the Madras Government for MPF. It has also taken over the production of about 750,000 lb. of MPF for private firms. The Government of Madras has initiated an extensive mid-day school feeding programme for children in the State with MPF as one of the meals.

Seminar on Collagen

Scientists and leather technologists from India and abroad participated in a seminar on collagen held at the Central Leather Research Institute, Madras during Nov. 29-30, 1960. Prof. M. S. Thacker, Director-General, Scientific & Industrial Research, inaugurated the seminar, which was presided over by Dr. A. Lakshmanaswami Mudaliar.

Thirty-six papers covering the various disciplines of science, technology and medicine and pertaining to different aspects of study and utilization of collagen were presented and discussed at the seminar. These also included contributions received from U. S. S. R., U. S. A., U.K., Germany, Sweden, Austria, France, Hungary and South Africa. Prof. Paul M. Gallop and Prof. B. S. Gould of the United States and Prof. G.N. Ramachandran of the University of Madras delivered popular lectures.

Corrosion and its Prevention

A five-week course on Corrosion and Its Prevention organized by the Central Electrochemical Research Institute, Karaikudi, for the benefit of technical personnel employed in industry and various government organizations commenced at the Institute on Nov. 7, 1960. Twelve representatives from industrial units and government departments are attending the course. The course comprises of 80 lectures on corrosion and its prevention and allied subjects and 60 hours of practicals and demonstrations.

CFTRI, MYSORE—Roasting Unit of MPF pilot plant

Dhatu Anusandhan Aur Udyog

This 32-page Hindi brochure describes the role of the National Metallurgical Laboratory, Jamshedpur in the development of metallurgical research and industry in India and outlines in simple and popular language the results of investigations carried out at the Laboratory, with particular reference to the development of nickel-free stainless steel compositions; production of pig iron from sub-standard iron ores using non-coking coals, steel by L. D. process and ferro-alloys; and up-grading of manganese ores and utilization of Indian sands for foundry moulding purposes.

Copies of the brochure are available from the Publications Directorate, CSIR, New Delhi.

Research Fellowships

The following have been awarded *CSIR Fellowships* for research in schemes noted against their names :

Senior Fellowship :

Dr. B.B. Bhatia—*Electrochemical approach to some aspects of structural chemistry of synthetic polymers* (University of Delhi, Delhi).

Junior Fellowships :

1. Shri Ved Prakash Gupta—*Determination of molecular weight of addition polymers by end group analysis* (Lucknow University, Lucknow).
2. Shri Abdul Hafeez—*Studies in addition polymerization* (Lucknow University, Lucknow).

The Director-General, Scientific & Industrial Research has been pleased to accept the resignation of the following research fellows :

Senior Fellowship :

Dr. S.R. Chatterjee—*Fundamental studies on the solvent extraction of coal*, Indian Association for the Cultivation of Science, Jadavpur, (Dec. 6, 1960).

Junior Fellowships :

1. Shri T. Krishnamurthy—*Studies on pigments of Indian lichens*, Andhra University, Waltair (Oct. 21, 1960).

2 & 3. Sarvashri Balaram Das & Rezaul Haque— *Studies on the biosynthesis of fats*, University College of Science and Technology, Calcutta (Sept. 1 & Nov. 30, 1960).

4. Shri Jagadish Chandra Sircar—*Total synthesis of triterpenoids*, Presidency College, Calcutta (Dec. 7, 1960).

5. Shri Ajoy Kumar Ganguly —*Mechanism of vulcanisation of rubber*, Indian Association for the Cultivation of Science, Calcutta (Nov. 1, 1960).

CIMPO Zonal Office

A Zonal Office of the Central Indian Medicinal Plants Organisation has been set up at 74, III Block, Jayanagar, Bangalore-11, with effect from Nov. 15, 1960. Dr. M. N. Ramaswamy has been appointed Assistant Director of the Zonal Office.

RESEARCH IN PROGRESS

National Laboratories

NML, JAMSHEDPUR

Up-grading of Manganese Ore—Beneficiation of low-grade manganese ore (assaying Mn, 40.02; Fe, 4.82; SiO_2, 19.34; Al_2O_3, 3.8; CaO, 1.1; BaO, 3.32; MgO, 0.69; and P, 0.18 per cent) from Lohandabud group of mines Jharsuguda, Orissa, has been studied.

Electrostatic separation of the magnetic product, obtained from high intensity magnetic separation after hydroclassification of the —35 mesh ground mixed sample, gave a concentrate assaying 45.2 per cent Mn and 9.7 per cent SiO_2 with a recovery of 63.4 per cent Mn. Cationic flotation using Armeen-12D as collector for siliceous gangue at a pH range of 8—8.5 produced a manganese concentrate assaying 44.8 per cent Mn and 11.0 per cent SiO_2 with a recovery of 60.0 per cent Mn. One of the samples when subjected to high intensity magnetic separation yielded a concentrate assaying 46.2 per cent Mn and 7.7 per cent SiO_2 with a recovery of 85.8 per cent Mn, indicating its suitability for profitable beneficiation.

CFRI, JEALGORA

Electrical Conductivity of Coke—Effect of fineness, rank of coal, moisture, and temperature and method of carbonization of coals and their blends on the electrical conductivity of cokes has been studied. The study is helpful in selecting cokes with low electrical conductivity for metallurgical industries, which have a high consumption of electricity.

The results of the study show that the electrical conductivity of the finer fractions of coke is lower than that of the coarser ones, and it is a function of the rank of the parent coal and shows a progressive rise with increase in the temperature of carbonization. A close correlation between the electrical conductivity of cokes and their strength indices has been observed.

The electrical conductivity of binary blends shows an optimum value for the strength index and affords an easy means of ascertaining the proportions of coals that would give the best coke. It varies inversely with the reactivity of coke to carbon dioxide. Both electrical conductivity and true density of blends are disproportionately higher than the values of the individual constituents and coals appear to be upgraded by blending—S.K. SHARMA, S. K. SEN GUPTA, N.N. CHATTERJEE, N.N. DAS GUPTA, & A. LAHIRI.

CLRI, MADRAS

Stability of Skin Collagen—Influence of biological ageing on the stability of skin collagen has been investigated. It has been observed that the shrinkage temperature and total ester-like linkages in collagen increase with ageing. The availability of E-amino and guanidino groups decreases with ageing which suggests that both these groups are involved in the changes taking place in the ageing of collagen. The ageing of collagen is associated with an increased binding of carbohydrate and an improved fibrous texture.

The nature of the glycopeptide isolated from mature collagen has been investigated.

CSRI, BHAVNAGAR

High-Grade Calcium Carbonate—Conditions for the production of special-grade calcium carbonate (suitable for use in pharmaceutical and rubber industries) from calcium chloride, a bye-product, have been standardised. The product, prepared in bench-scale experiments, has been tested and found to be satisfactory by rubber and pharmaceutical industries.

Sponsored Research

Storage of Fruits and Vegetables—Investigations have been carried out on the storage of orange, litchi and mango.

Storage studies on oranges of Darjeeling variety at different temperatures indicate that at 40°F. physiological losses in weight and spoilage of the fruits due to fungal rot or rind blemishes are minimised. Oranges stored in traditional bamboo baskets show much higher spoilage due to mould infection than those stored in rectangular wooden bodies with corrugated brown paper lining.

Treatment of Darjeeling oranges with sodium hydroxide or phenol greatly retarded the mould growth, the percentage spoilage of fruits after 20 days' storage at 40°F. being 20.8 and 19 respectively as against 43 in the case of the control. Nagpur oranges treated or untreated were not spoilt during 20 days' storage at 40°F. The percentage of rot which occurred after transferring the fruits to room temperature was different with fruits treated differently. Ascorbic acid treated fruits got spoiled even after one week's storage.

Phenol treatment or wax emulsion coating or wax coating after phenol treatment had the same effect on the storage life of Nagpur oranges. Packaging of fruits in alkathene bag with or without previous phenol treatment did not alter the rate of spoilage when the fruits were brought to storage at room temperature.

Storage studies on a locally grown variety of litchies showed that these had a very short storage life even at 40°F. Treatment of the fruits with wax emulsion prevented loss in weight and shrinkage of fruits but did not help to retain the fresh colour or flavour.

Storage experiments on mangoes of Himsagar, Langra and Lakhanbhog varieties indicate that in the case of Himsagar and Lakhanbhog varieties, the storage life of fruits is improved by treatment with 2.5 per cent phenol solution—A.N. BOSE & SITANSU BIMAL, Jadavpur University, Calcutta.

Research Schemes Terminated

The following research schemes have been terminated :

1. *Techniques for the wind tunnel test at Mach. No. I*—Dr. Satish Dhawan, Indian Institute of Science, Bangalore (Nov. 30, 1960).

2. *Comparative study of electrolytes and protein pattern*, etc.—Dr. A.C. Majumdar, Calcutta University, Calcutta (Dec. 31, 1960).

In Parliament

Institute for Training Precision Technicians—Dr. M.M. Das, Union Deputy Minister for Scientific Research and Cultural Affairs, stated in Lok Sabha that the Swiss Foundation for Technical Assistance would provide the Council of Scientific and Industrial Research with one million Swiss francs worth of equipment and eight Swiss experts for a period not exceeding five years for establishing a centre for training of precision mechanics and technicians for the instruments industry.

The Deputy Minister said that inclusive of Swiss aid, the total amount involved in this project is about Rs. 1 crore spread over a period of five years. The location for the centre has not yet been decided upon (*Dec. 7, 1960*).

PERSONAL

(*Contd. from p. 1, col. 2*)

● Shri Pratap Singh, Senior Scientific Assistant, NBG, Lucknow, after completion of 3-years' studies in the U.S.S.R. on Pharmacognosy of Medicinal Plants and their Cultivation, returned and resumed duty with effect from Dec. 13, 1960. He worked at the Moscow State University and the All Union Research Institute of Medicinal and Aromatic Plants, Moscow.

* * *

● Dr. B.R. Nijhawan, Director, NML, Jamshedpur, has been elected Vice-President, Indian Institute of Metals for 1960-61.

● Dr. Y. Nayudamma, Director, CLRI, Madras, has been nominated a member of the Governing Body of the Madras Productivity Council.

● Dr. I.C. Chopra, Officer-in-charge, RRL, Jammu, has been nominated a member of the Medicinal Plants Committee of the Indian Council of Agricultural Research, New Delhi.

● Dr. B.N. Singh, Asst. Director, CDRI, Lucknow, has been nominated a member of the Ad-hoc Committee constituted by the Indian Council of Agricultural Research for formulating a coordinated scheme on Biological Mineralization particularly Phosphorous and Iron Compounds.

● Dr. S.K. Barat, Asst. Director, CLRI, Madras, has been nominated a member of the Vegetable Tanning Materials Sub-committee of the Development Council (Leather), Ministry of Commerce & Industry.

* * *

● Shri N. Subramanyan, Senior Scientific Officer, CECRI, Karaikudi, has been awarded the diploma of the Battersea College of Technology, London on completion of post-graduate research work in the field of electrochemistry at the College from Sept. 1957 to March 1959.

● Shri U.K. Banik, Senior Scientific Officer, IIBEM, Calcutta, has been awarded the D.Sc. degree by the Calcutta University for his thesis : *Studies on Human Chorionic Gonadotrophin and Properties of Gametokinetic Substance of Bovine Faeces.*

● Shri K.V. Rao, Senior Scientific Assistant, IIBEM, Calcutta, has been awarded the D. Phil. degree by the Calcutta University for his thesis, *Isolation of Active Plant Constituents and their Chemical Studies.*

● Shri M.L. Bhaskara Rao, Senior Scientific Assistant, CECRI, Karaikudi, has been awarded the D. Phil. degree by the Calcutta University for his thesis, *Physico-Chemical Studies on Synthetic Polymeric Ampholytes and their Derivatives.*

Research Papers

Washing tests on Dugda washery field coals in 40 t. p. h. coal washing pilot plant at CFRI—G. G. Sarkar & A. Lahiri, CFRI, Jealgora. *J. Mines, Metals & Fuels*, **8** (10) (1960), 1-9.

Relationship of the properties of the coals with those of their cokes—N.C. Sinha, B.K. Sinha, A.K. Roy Chowdhury, J.M. Sangal, N.N. Das Gupta & A. Lahiri, CFRI, Jealgora. *Coke & Gas*, **22** (1960), 382-88.

Pollen grains of cultivated plants I :—P.K.K. Nair, NBG, Lucknow. *J. Indian bot. Soc.*, **39** (1960), 373-81.

Development of some thermal insulating materials in India—B.M. Bishni & J. Prasad, CGCRI, Calcutta. *Engineer Iron Steel Rev.*, Ann. No. 1960, 57-62.

Search for new antimalarials : Synthesis of some 8-amino alkylamino and 8-dialkylanoalkylamino-chromones : Part V—A. B. Sen & P.R. Singh, Lucknow University, Lucknow. *J. Indian chem. Soc.*, **37** (1960), 217.

Physical properties of organic substances—S. K. K. Jatkar & V. S. Jatkar, University of Poona, Poona. *J. Univ. Poona*, **18** (1960), 25-28.

PATENTS & PROCESSES

Application Filed

74451 : *Preparation of covering materials from anacardic materials*—D. Raghunath, N. P. Suryanarayana & N. R. Krishnaswamy, NCL, Poona.

Applications Accepted

67461 : *Process for the manufacture of carnallite from sea bittern*—K. Seshadri, G.D. Bhatt & C.J. Dave, CSRI, Bhavnagar.

68173 : *An improved process for the manufacture of ethylene dichloride*—Satish Chander, R. K. Bhatnagar, & N.R. Kuloor, Shri Ram Institute for Industrial Research, Delhi.

Applications Sealed

65696 : *Production of carbon pastes for use in the continuous solderberg electrodes*—Peri Prabhakaram, & H. P. Srinivasamurthy, NML, Jamshedpur.

65780 : *Improvements in or relating to evaporated metal coatings particularly suited for optical elements*—P. Hariharan, NPL, New Delhi.

Polystyrene-base Cation Exchange Resins

The National Chemical Laboratory, Poona, has developed a process (Indian Pat. No. 65976) for the manufacture of cation exchange resins based on polystyrene matrix. The total exchange capacity of the resin (42-43 kilograins of $CaCO_3$/cu. ft.) favourably compares with that of imported products.

The process consists in the production of the copolymer of styrene and divinyl benzene and sulphonation of the copolymer. The total capital outlay for a commercial plant (capacity, 4 cu. ft./day) is estimated at about Rs. 88,000.

Parties interested in taking up the commercial development of the process may correspond with the Secretary, National Research Development Corporation, Mandi House, New Delhi-1.

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